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Crude Oil Situation Creates Optimism

Average daily production in United State week ending Jan. 5 1,933,197 bbls.

Production Dropped 14,353 Barrels Daily Last Week. Output Down to Last April's Figures. Consumption Greater

Loss in daily production in United States week ending Jan. 5, 14,353 bbls.

(By Andrew M. Rowley)

All calculations affecting the crude petroleum situation throughout the United States at this time, in the final analysis, simmer down to one basic fact —production has dropped to where it was last April, while consumption has increased greatly over that period and is not diminishing to any appreciable extent. It does not require any great student of economics to determine just what this means. When the demand for any commodity increases and the available supply decreases, those engaged in the production and distribution of that commodity should experience a profitable business.

The consumption of crude petroleum and its products is steadily increasing for two reasons, first, because more persons are making use of these products in the form of gasoline and lubricating oils and, secondly, because many more uses are being found for petroleum. Consequently, comparisons of production at the present time and previous periods and comparisons of stocks of crude petroleum mean little or nothing unless the one big factor of consumption is considered.

Consumption Growing Steadily

It has been but a comparatively short time since all oil men talked of the "period of minimum consumption," meaning the winter season when cold weather caused automobile owners to put their cars in storage and when the demand for gasoline reached a low ebb. With the improvements made in motor cars, it is now the exception rather than the rule for an automobile owner to jack up his car through the winter months. Consequently, there is a far less falling off in the consumption of gasoline during winter months than formerly. But, the most important factor in the entire situation is the rapidly growing use and demand for oil for domestic burner consumption.

One of the paramount factors in the oil business today is the development of the oil burner for home, apartment and building use. The use of fuel oil for this purpose is spreading rapidly and already has reached considerable proportions, although it is admitted this use is still practically only in its infancy. This growing demand for fuel oil comes in the period of cold weather when the demand for gasoline falls off. Hence, the wide margin which formerly existed between consumption in the summer and winter has almost disappeared and the "period of minimum consumption" will soon be a thing of the past.

The Situation at This Time

Last April there was not great fear of the overproduction situation which later menaced the industry and from which it is only now recovering. The production of crude petroleum in all fields of the United States averaged 1,935,285 barrels daily last April. During the past week it averaged 1,933,197 barrels. Last April the consumption of crude petroleum averaged 1,856,900 barrels daily. In November, consumption averaged 2,040,133 barrels daily, which figures show an increase of about 5,000 barrels a day over the first figures on consumption issued by the United States Geological Survey for October, but which are about 5,000 barrels less than the revised figures for that month. Hence, it may be said consumption during November was practically the same as during October and there has been no indication of any great change for December.

California production during the past week dropped to 686,300 barrels, or less than it was last April when it averaged 689,865 barrels a day. Stocks of crude remained practically stationary in California in November. That State is very rapidly reaching the point where it will require all of its production to supply its own requirements. That this situation is already being felt is indicated by the fact the Prairie Oil and Gas Company's shipments of crude in December were 45,898 barrels a day more than during November. This shows a substantial increase in the movement of Mid-Continent oil northward and eastward. It proves California is becoming less of a competitor and that there is a greater demand for Mid-Continent crude. All of which points ultimately to better prices.

PRODUCTION IN THE UNITED STATES

Estimated daily average production in the oil fields of the United States for the week ended January 5, and a comparison with the previous week follows:

Field:	Jan. 5	Dec. 29
Oklahoma—Northern Fields:		
Tonkawa	42,450	44,250
Burbank	69,890	71,350
Other Osage Fields	30,500	30,600
Cushing and Shamrock	24,390	24,400
Bristow and Eastern Bristow	46,600	47,210
Northern Miscellaneous	89,975	89,980
Southern Fields:		
Healdton	17,250	17,250
Hewitt	20,100	20,300
Southern Miscellaneous	25,575	24,600
Total Oklahoma	366,730	369,940
North Louisiana	54,415	54,270
Arkansas—		
El Dorado	11,895	11,990
Smackover Light	24,910	27,805
Smackover Heavy	102,010	104,930
Other Arkansas Fields	12,795	13,265
Total Arkansas	154,610	157,990
North Central Texas	111,294	110,215
East Central Texas (Mexia, Currie, Corsicana, Powell)	132,328	122,500
Kansas	71,400	71,500
Total Mid-Continent Area	890,777	886,415
Gulf Coast	87,000	86,790
Wyoming-Montana	159,920	162,045
California—		
Santa Fe Springs	159,000	172,000
Long Beach	228,000	232,000
Huntington Beach	65,000	66,000
Torrance	35,000	38,000
Remainder State	199,300	195,000
Total California	686,300	703,000
Total United States	1,933,197	1,947,550

Decrease, 14,353 Barrels

Production Becoming Settled

While there was a decline of 14,353 barrels daily in the average production of crude petroleum in all fields of the United States during the past week, it may be said production is becoming more stationary everywhere except in California. There was a decrease of 16,700 barrels a day in California, bringing the output of that State below the 700,000-barrel mark. Few changes of importance in production records of the various fields may be expected from this time unless the unforseen develops. Decreases may be expected in Arkansas, where pipe line runs are holding up the figures. The Powell Field in Texas is not expected to show great changes from week to week. Production there increased 10,000 barrels a day last week because 100 wells which had stopped flowing were placed on the pump. It will be necessary to keep the wells there on the pump to hold up the output. The cold wave of the latter part of last week stopped work with the result production dropped from 91,000 barrels on Saturday to 81,000 barrels Monday.

When the operators resume active development work in the Burbank Field in Oklahoma, production there will increase rapidly. The shut-down agreement among operators has been observed rigidly with the result the output of the field has continued to decline steadily. It is believed production of Burbank can be increased to 100,000 barrels a day within a comparatively short period of time when operations are resumed. There are 118 wells shut down in the field now and 45 of these are on top of the sand. It would take but little time to complete these wells.

Crude Oil Price Changes

It depends largely upon crude oil producers themselves just how rapidly crude oil prices will be advanced. That prices will advance more, there seems to be little doubt. Action by the Prairie Oil & Gas Company, dominant factor in the Mid-Continent Field, is being watched carefully. What is done in the Burbank Field in Oklahoma may have a most important bearing upon the action of this and other purchasing companies in the matter of increasing prices. In all fields there is a tendency upon the part of the large operators to urge caution in starting extensive drilling campaigns. A little patience at this time undoubtedly will result in greater good for all in the future.

The outlook for the entire industry seems most bright. There are at the present time no new fields of importance in sight. It seems it will be necessary soon to make substantial drains upon stocks of crude and such a procedure always means higher prices. Increasing production now would only defer the time when these higher prices obtain. If producers "sit tight" now, advances in prices will be made sooner than they otherwise would be

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Crude Oil Prices Advanced by Prairie

Increases Range From 25 to 50 Cents. Other Companies Follow Suit. Increase Means Millions to the Producers

A simple announcement made yesterday, January 9, by the Prairie Oil & Gas Co., added millions of dollars to the wealth and income of crude oil producers and owners in Oklahoma, Kansas and North Texas. The company stated it had advanced its posted prices for crude purchased on a gravity basis, the new schedule of prices being an increase of from 25 to 50 cents a barrel. The other major purchasing companies followed the action and met the prices announced by the Prairie.

The Prairie added one grade to its schedule of prices, the new schedule being as follows:

Below 33	$1.00
33 to 35.9	$1.25
36 to 38.9	$1.40
Above 39	$1.50

The former schedule and prices follow:

Below 33	75c
33 to 39.9	$1.00
40 and above	$1.25

The new prices are an increase of 25 cents a barrel for gravities below 35.9 degrees; an increase of 40 cents on oil ranging from 35.9 to 38.9 degrees; an advance of 50 cents for oil of 39 degrees and an increase of 25 cents on oil above 40 degrees. The action of the Prairie, as it affects oil above 33 degrees was met by the Magnolia Petroleum Co., which advanced its price on oil of 31 to 32.9 degrees 10 cents with no change in the other gravities below 33 degrees. The Texas Co., which had advanced crude prices on December 27, also met the Prairie prices, that meaning a 10-cent advance over the prices which The Texas Co. has been paying since December 27. Cosden & Co., the Empire Pipe Line Co., the Gypsy Oil Co. and Sinclair Crude Oil Purchasing Co. announced they had met the Prairie prices.

What the Advance Means

The advance means, first of all, millions of dollars for those engaged in producing and selling crude petroleum. Based on the production of the past week, which showed an output of 549,424 barrels daily for Oklahoma, Kansas and North Texas, the advance in price means an increase in income of about $150,000 a day for producers in the area affected. In addition to that, it is estimated there is at this time at least 175,000,000 barrels of crude oil in storage in Oklahoma, Kansas and North Texas. A large part of this oil is high gravity but even figuring on an increase of 25 cents a barrel the value of this oil in storage alone was increased more than $43,000,000.

This increase in the value of oil in storage is of paramount importance not only to the owners but to financial institutions and business concerns operating throughout the entire territory. Loans made on this oil are made more secure and the owners are not confronted by the possibility of a decline in price forcing them to sell the oil at ruinous prices in order to obtain money to make their security good.

The advance means considerable sums of money made available for development work and for buying needed equipment and supplies to carry on this work. The importance of this cannot be overestimated because the past year has been one of great depression for the industry in general and the oil companies were forced to curtail expenses along all lines because of the overproduction situation and consequent low prices for oil.

Advance Was Expected

Since the collapse of the Powell Field in Texas and the rapid decline of production in California, operators have expected crude oil prices to be advanced. The record declines in output during the past two months brought production down to a level with consumption and it is the consensus of opinion at this time a number of the large companies have been drawing on storage.

The action of the Prairie Oil & Gas Co. confirms the belief the oil industry has definitely turned the corner from depression and has entered upon a period of prosperity. While production figures have shown for some time the margin between production and consumption had reached the vanishing point, the increase in price was needed to assure everyone that one of the worst periods in the history of the industry had passed definitely.

Further Increases Possible

Oil operators feel the advance in price made yesterday is but a forerunner of further increases in price. They point to the fact production at this time is down to where it was last April, while consumption is nearly 200,000 barrels a day more than it was last April, with no signs of diminishing.

The advance made by the Prairie yesterday was the first announced by that concern since February 17 of last year. It was the first time since the Prairie started to buy crude on a gravity basis on November 22, 1922, that an advance of 25 cents or more was made, other advances being 10 cents. When the Prairie announced its gravity scale of prices, it had been paying $1.25 a barrel for crude. The gravity schedule ranged from 90 cents to $1.80. On January 13 last, the Prairie started to advance crude at the rate of 10 cents a barrel and it made six such advances until February 17, which marked the last until yesterday.

The Prairie started to reduce crude prices on April 23, last, when it cut the price 10 cents. Three other cuts were made in May, each being 10 cents, and being on May 2, May 5, and May 12, bringing the range in prices down to from $1.10 to $2.20 per barrel. On September 19 the Prairie announced a three-grade schedule of prices ranging from 90 cents to $1.75, and on November 8, it placed in effect the prices which obtained until yesterday, which ranged from 75 cents to $1.25.

OIL BURNER MAY SAVE INDUSTRY IF GASOLINE CONSUMPTION SHRINKS

By Frank T. Lauinger

A remarkable interest in the possibilities of the fuel oil burner for house heating has developed within the industry in the last few months. Oil publications have been devoting page after page to the subject. Students of the problems of supply and demand have seized on the domestic burner as the most likely solution of the great evil of overproduction, waving aside all other proposed remedies as mere palliatives or correctives. Acknowledged leaders of the oil fraternity have been proclaiming it from the rostrum in recent conventions as the future field through which the industry will find its broadest development.

Singularly enough, during the same period there has appeared the phenomenon of a spontaneous, widespread demand for an oil burner on the part of the public. The public accepts the idea of the burner as being 100 per cent practical, and has largely assumed the attitude of merely waiting to be supplied. The popularity of the idea is no doubt due to the fact that oil is generally known to be one of the most ideal of all fuels. Consequently, when the perfected burner "arrives," it will be only a short time until it is in general use all over the United States.

Doubters Disproved

We must realize that this is an age of rapid development. It is but comparatively a few years ago that thousands of readers of the daily press scoffed at the pioneers of the "horseless carriage"; and but a short time later when the shafts of the cynics were aimed at the "visionary" inventors and developers of the airplane. Without these inventions the oil industry would still be back in the "kerosene stage."

The doubt and skepticism of the unbelievers of the past is no less in evidence today when the subject of the burner is brought up among oil men. It is alleged that prices of fuel for household consumption would fluctuate so widely as to make its adoption impractical; that continuous supplies for a future market would be difficult or impossible to insure; that the lower price of coal would constitute a barrier in the way of its development.

These, along with a hundred other arguments are advanced against the possibility of its ultimate success. Yet all these objections are unstable when viewed in the light of the past history of the industry. They are insignificant as compared to the real problems met and solved by the petroleum industry in adapting and adjusting itself to the stupendous demands brought about by advent of the automobile.

It is the province or invention to lead; of industry to follow. The theoretical difficulties of today are usually dissolved in the practical developments of tomorrow. And so for the burner, the history of the past should inspire confidence in the future. With the incentive of greater demand, new oil fields will be sought and found; larger recoveries will be made from the oil bearing rock; great known reservoirs of petroleum now inaccessible, in South America, Central America, Mexico and other countries, sufficient to meet world demands for the next half hundred years and more, will

(Continued on Page 98)

STANDARD OIL CO. OF NEW YORK ENTERS BUSINESS OF SELLING OIL BURNERS

By N. O. Fanning

NEW YORK, Jan. 8.—The Standard Oil Co. of New York has decided to go into the business of selling oil burners. To this end, it has organized the Socony Burner Corp., with a capital of $1,000,000, with H. L. Pratt, as president. The company has purchased for $500,000 patents on an oil burner manufactured by the Skinner Engine Co. at Erie, Pa. The intention is not to put this burner on the market immediately but to work with the Skinner company engineers on the burner until certain improvements are made. It is hoped by the company to have the burner ready to market by next winter.

The Standard Oil Co. of New York says it has not as yet decided whether to manufacture burners itself at a plant to be erected or to continue manufacturing at Erie, Pa., but it will establish an organization now in New York for the purpose of ultimately selling and distributing its burner in connection with the sale of furnace oil.

N. W. Pa. Producers Join Campaign for Pennsylvania Grade

BRADFORD, Pa., Jan. 6.—At a large and enthusiastic meeting of the Northwestern Pennsylvania Oil Producers Association held here yesterday, plans were made for the cooperation of the organization with the Pennsylvania Grade Crude Oil Association. More than 100 attended, although the temperature was near the zero mark. William J. Healey, president of the Northwestern Pennsylvania Oil Producers Association, presided.

It was decided to employ a field man who would go into the producing territory and interest the operators of the section in the Pennsylvania Grade Crude Oil Association, obtaining their memberships. At the same time it was arranged to have a campaign to increase the membership of the Northwestern Pennsylvania Association. A publicity committee was also appointed to arrange for the creating of more interest in the subject of uisng Pennsylvania oil products in Bradford.

A meeting with the business men of the city is to be held in the Board of Trade rooms Wednesday at which the oil producers will present their case and urge the business men to insist upon Pennsylvania oil products when they are using gasoline, lubricants or any of the other products on the list. On the same day a committee of oil men will wait upon the automobile dealers association to present the same matter. All the other organizations of the city are to be asked to join in a movement to have every Bradford oil user insist upon Pennsylvania quality.

BUYERS OPPOSE TAX CHANGE

The proposal of Oklahoma State officials that crude oil purchasers pay the 3 per cent gross production tax on oil rather than the operators is expected to receive unanimous disapproval of the oil buyers. The opinion of many purchasers has been sought by the Mid-Continent Oil & Gas Association and all have been against it. One of the chief objections is the large increase in bookkeeping. The companies think they should not be forced to stand an increased overhead for the State's benefit.

MARLAND PRICE SCHEDULE

Effective January 9 the Marland Refining Co. announced a new schedule of prices for Oklahoma crude. The new prices are the same as those paid by the Prairie Oil & Gas Co. announced for the same date except for gravities above 39°. For the 39° to 41.9° gravity, the company price is $1.50 and for 42° and above $1.65.

How La Follette Plans to Regulate Oil

Will Start With Bill to Compel Reports to Government as Opening for Legislation for Greater Federal Control

By Charles E. Kern

WASHINGTON, D. C., Jan. 7.—"What legislation affecting the oil industry will be proposed by Senator La Follette?" is the question most frequently asked by oil men who have drifted into Washington during the past nine months.

That the Wisconsin senator has had in mind a bill, sweeping and drastic, for this purpose ever since he made his report to the Senate as chairman of the so-called gasoline committee that conducted hearings last winter is well known.

Since the sixty-seventh Congress adjourned the Nemesis of the oil industry has spent many months in the Old World, giving especial attention to the Soviet Government of Russia, and upon his return to Washington he has been ill in his home and unable to appear in the Senate. However, almost from the day of his return an announcement has been made frequently to the effect that "early in January" the senator would introduce his bill for the regulation of the oil industry. On several occasions it has been noted that after a spell of illness the Wisconsin senator has emerged from his seclusion with his legislative howitzer cocked and primed for an onslaught upon "big business."

Senator La Follette has a habit of keeping from all persons the exact nature of his campaigns against "big business." He is not averse to having it known that he is loaded with ammunition and in conversations he divulges the trend of his mind on some element of his attack. It is from these conversations that it is possible to judge what he has in mind. But the wording of the bill he is to let loose in the Senate is a secret well kept.

To Curb Speculation

One of the paragraphs of the senator's forthcoming bill for the control of the oil industry is to curb speculation in oil stocks so far as such speculation is based upon supply and demand. In a conversation some time ago he remarked that the listing of the oil stocks on the stock market by some of the companies known as "Standard" and dealings in such stocks by the public was a distinct departure from the practices in vogue under the influence of John D. Rockefeller, Sr., in the days of the Standard Oil Co. prior to the dissolution decree. He reasserted his statement that the Standard Oil bogey man knows everything about oil and fixes the price of crude and refined products with certainty that no known power can question or change. He believes he has divined one of the elements of Standard Oil psychology that permits it to do this. Briefly it is that the Standard Oil alone knows the exact facts relating to production and stocks on hand whether they be of crude oil or refined products. He proposes to reform the industry and break the backbone of oil stock speculation by a law which will require frequent and complete reports of all petroleum and its products held in storage.

Will Demand Reports

It is not that such products held in stock actually affect the price of oil, according to the senator's view, but that Government guaranteed complete reports will remove all possibility of any deception concerning these facts as a means of removing what he regards as one of the pretences for price movement up or down. It will show, he claims, that prices go up or down without any relation to the law of supply and demand, but merely at the will of powers that have only to point thumbs up or down to force the market to swing in unison with their interest.

The foregoing will sound strange to men in the industry who are students of oil statistics. The Oil and Gas Journal, the United States Bureau of Mines, the United States Geological Survey, the United States Census Bureau and the American Petroleum Institute are among the special agencies engaged in collecting and analyzing oil statistics, each of these agencies working independently to a large degree in keeping tab on oil held in storage.

It is well known that the Bureau of Internal Revenue through its oil and gas section studies published statistics bearing upon the production, refining and marketing of petroleum in connection with examination of the tax returns of the big oil companies and any glaring disparity of statement could scarcely avoid detection. But to correct the evil of false statistics the La Follette bill is to provide that statements now rendered by the trade voluntarily are to be sworn statements.

Government Control Aim

In a very positive way Senator La Follette wishes to bring the oil industry in all of its phases under government control by some method that may be relied upon to have a controlling influence in the fixing of prices of the crude and refined products so that there may be a fixed relation between those two sets of prices. Just how this is to be accomplished has never been divulged. However, it is to be accompanied by various requirements respecting the way the industry is to be conducted. A uniform system of bookkeeping by all oil companies doing an interstate business is to be required so that at any time costs and profits of the business may be shown and the "reasonableness" of prices charged for any petroleum product can be ascertained on a cost basis. The truth is the requirements of the income tax now largely meets exactly this requirement.

The bill will provide that pipe lines shall function as real common carriers, although the interstate commerce law has for many years made them common carriers and the interstate commerce commission stands ready to enforce these provisions whenever anyone applies for relief claiming that the pipe lines do not function in accordance with the intent of the law. As strange as the statement may sound to the uninformed, no one has made any effort to take advantage of this law by applying to the commission for relief except in a single instance when an application was made requiring delivery of crude oil at an abandoned station in Pennsylvania and the commission enforced its order that deliveries should be made as applied for.

Freight Rate Regulation

Senator La Follette's bill will attempt to further control freight rates so that Mid-Continent refineries may place their products at more places in the Middle West and in New England where they are now restricted in doing so by freight charges.

Something will also be provided in the bill to obstruct the exportation of petroleum in a way to keep down domestic prices. It will be quite interesting to learn how that result can be accomplished.

These are some of the features of the La Follette bill now in the making. Nothing in them appears to be alarming so far as concerns any reasonable methods for putting them into effect. But there is a single feature of the forthcoming bill that would allow it to throttle all initiative and practically place the industry under Government control in all of its essential features if enacted into law. That is, there is to be a "bureau" or "commission" or some agency that is to be the repository of these powers for seeing that the act is enforced. It is expected to operate as some "commissions" have worked; that is, to start with powers much less than those it is hoped to endow it in some future congress. In that way the oil industry will be started on its road to complete Government control by the votes of senators and representatives who would not vote for the controlling body in the form it is expected ultimately to take.

It is not altogether what Senator La Follette may attempt to put through the Senate in the present Congress that will be important, but the direction he will hope to give for future legislative control of the oil industry.

Needs to Be Watched

The importance of providing for a careful watch on this legislation is that it is different from the control now being exercised or proposed to be exercised on any other of the great industries of the country with the single exception of the railroads, which are so completely controlled by the interstate commerce commission and which in their nature have little in common with the great petroleum industry, the second largest industry of the country.

No definite idea of just what Senator La Follette will propose can be known until he introduces his bill, and even then its full effect upon the industry cannot be known because a multitude of amendments for "strengthening" the measure will be proposed and voted upon.

ANGLES IN THE NEW AGITATION

Charging that manipulation of reports of stocks is at the bottom of speculation Senator La Follette wants law requiring sworn statements.

This is expected to be the opening for further legislation that will lead to active government of regulation.

Will demand that pipe lines function as real common carriers. Fact that in only case carried to Interstate Commerce Commission it ordered deliveries and anyone can obtain relief under existing law ignored.

Effort to be made to control freight rates on petroleum products and to obstruct exportation if it affects domestic prices.

Main purposes of bill would be the creation of a bureau or commission to enforce the law but really to control the industry.

SENATE COMMITTEE INVESTIGATION OF TEAPOT DOME LEASE IS CLOSED

By Charles E. Kern

WASHINGTON, D. C., Jan. 7.—The Senate inquiry into the contract made by the Departments of the Interior and the Navy for the drilling of Teapot Dome has closed, so far as concerns plans for the taking of further testimony. The relations of former Secretary Albert B. Fall of the Department of the Interior with Harry F. Sinclair have now been fully gone into by Senator Walsh of Montana, who has been the leader in the committee in the conduct of the investigation. The significant fact bearing upon the entire proceeding is that during the latter half of the period devoted to this inquiry, the committee has abandoned the chief object sought by the Senate resolution, which was to determine the wisdom or lack of wisdom in the removal of oil from the dome and the desirability of the contract made for that purpose from the standpoint of the Government.

The most searching inquiry has called for a volume of evidence from experts and officials to justify the removal of the oil from the dome against which very little has been offered by those who contended that it should have been kept untouched for emergencies of the future. The same statement applies to the desirability of the contract as an advantageous one for the Government. There has been very little even in the form of opinions to question its fairness.

Events showing the nature of the oil in the dome have combined to show that had the geologists been able to predict accurately all conditions that would be met. Harry Sinclair probably would not have either sought or entered into the contract he is now bound to conclude.

From the Teapot Dome Senator Walsh switched to an investigation of the personal business affairs of Secretary Fall with the apparent purpose of discovering whether he had received money or favors to influence his judgment in awarding the contract to Mr. Sinclair and to dig into the methods of Wall Street in handling transactions by the operation of stock pools.

It was shown that Mr. Sinclair presented a riding horse to Manager Jackson, who looks after the Three Rivers Ranch in New Mexico, which belongs to Mr. Fall, his daughter and son-in-law, and that Mr. Sinclair paid the freight on the horse, amounting to $1,100. Also that cattle purchased by Mr. Fall from the Sinclair farm near New York City, were shipped in the car with the horse, without expense to anyone as the freight bill would have been the same had they not been shipped at all.

Criticism of Fall

In that transaction is embodied all that anyone could criticize in respect to Mr. Fall's lack of vigilance in avoiding the appearance of evil, and it remains on the record for such interpretation as may be given to it by those possessing a suspicious nature. The transaction occurred prior to the leasing of the dome and was so written into records of the

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Petroleum Industry Taken by Surprise

Found Unprepared for Each Succeeding Development During the Past Year and Failed to Meet the Crisis Promptly

By Joseph E. Pogue
*Author of "The Economics of Petroleum"**

During the past three years the petroleum industry has experienced eight months of rising prices and 28 months of declining markets.

Why such a poor score for the most spectacular industry in the world in a period when automotive construction has broken all records? And how may it be explained that in 1923 a demand for gasoline exceeding last year's by 25 per cent is filled at prices reaching a low of 83 per cent of the pre-war average and 54 per cent of the general price level for all commodities? Surely the industry has been the victim of singular misfortune or else its affairs have been conducted with strange disregard of economic principles.

In order to understand the recent career of the oil industry it is necessary to look back over the past decade and sense a powerful motive that came into existence around the year 1919. During the war period the supply of crude petroleum was maintained with some difficulty in the face of growing requirements, and the attention of oil technicians was naturally drawn to studies of the resource size. Estimates of the unmined petroleum reserve were made by geological committees, and the conclusion was reached by many students of the industry that the resource was quite small when measured in terms of a rapidly mounting demand.

At first this deduction was scorned by the practical men of the industry; they had lived through a lifetime of oil bounty and the "surface was not yet scratched." But somehow the idea was insidious; it offered fascinating implications to the speculative turn of mind; and finally, almost overnight, the practical oil man was sold by the geologist and the theory of an oil shortage was accepted.

Preparedness Overdone

Oil men said: "Oil land is going to have a scarcity value; I must acquire all the leases I can secure." Wall Street said: "Oil offers big profits; I must buy oil securities while they are cheap." Capital said: "Oil will enhance in value; I must cultivate this field." The public said: "There are millions in oil; this is the place for my money."

But all this preparation for a shortage defeated its realization. With the oil-finding efforts and methods of 1918 the demands of 1923 could not have been met. But the speculative motives engendered by the shortage idea were sufficient to create an effort, both financial and technological, of sufficient power to accelerate production to a rate which demand, with all its Zev-like speed, has not been able to match, and since 1919 this country has witnessed no vestige of an oil shortage, but on the contrary an almost unbroken period of overproduction. "You can't anticipate your shortage and have it, too," would appear to be a good economic dictum.

The opening of the year 1923 was still under the influence of the momentum that had its inception in 1919 and 1920—a momentum which the low prices of 1921 and the price cuts of 1922 had not succeeded in bringing into check. Accordingly, production, at the outset moving at a rapid rate and in addition accelerated by premature and ill-advised advances in price, soon ran far ahead of requirements; a sensational bunching of flush pools ensued, and the industry suffered a series of price declines that carried its realizations in most instances below the cost of production. In retrospect, three features of this period of overproduction stand out: the inflated refinery activity of the winter; the rise of flush production in the Los Angeles Basin, and the meteoric career of the Powell Field in Texas.

Oil Flood Unmanageable

During the winter the refiners, eager to take advantage of the fine gasoline demand that was shaping up, omitted to slow down their operations in conformance with the season; on the contrary, they redoubled their efforts, overexpanded their capacity for cracking fuel oil into gasoline, feverishly bid up the price of crude oil, and piled up high-cost gasoline stocks to unsound heights.

At the same time the producer was speeding up the drill by every device known to modern science. Production was rapidly increased in the Mid-Continent and Wyoming, while in California it was found that by going to depths of 4,000 and 5,000 feet in the Los Angeles basin incomparably rich high-gravity oil horizons could be tapped. Here, indeed, the situation was accentuated and the speed of development quickened by the town-lot subdivision of the oil lands. A wild oil boom followed, millions of dollars were raised from the susceptible tourist, the rate of California oil production was doubled, trebled, and the surplus supply was forced to seek new outlets via the Panama Canal on the eastern seaboard. This flood of oil became unmanageable, coming as it did on the top of unwieldly gasoline stocks built up during the winter; the price structure weakened, then collapsed. The industry was thrown into the depths of depression.

Output Falls Rapidly

To cap the climax, around midyear a large gusher was brought in near Powell, in Texas, and in a few brief months the Powell Field had increased its prodution by leaps and bounds until in November a peak production of around 350,000 barrels per day had been attained. Never before has an oil field been so rapidly developed. Wells were drilled nearly 3,000 feet in depth in the incredibly short time of 20 to 30 days. In the face of a glutted oil market, operators marshalled their uttermost resources in technique in a frenzied race to gain the "flush" before the head was off. Powell holds the record for competitive effort. And, now, in the closing weeks of the year, the decline of Powell is proving as sensational as its rise. The production curve of this sensational field resembles a church steeple.

An outstanding result of these developments, from the point of view of the public, has been cheap gasoline. The course of gasoline prices over the year may be indicated by the following index numbers representing the average tank-wagon quotations in five important cities recalculated in terms of the 1913 average taken as 100: January, 124; February, 129; March, 123; April, 128; May, 121; June, 125; July, 124; August, 110; September, 97; Otober, 90; November, 84.

The demoralization of the gasoline market was widely advertised and became the object of innumerable investigations on the part of State, municipal and federal authorities. And great credit was realized by these officials, for in a falling market their efforts were invariably followed by lower prices! The high-cost refiners, and those so located geographically as to be unable to take advantage of cheap California crude oil, suffered cruelly in the process; heavy losses were entailed and many gasoline manufacturers were forced into bankruptcy. During the last third of the year the price of gasoline fell below the average cost of production, and profit margins disappeared for all except the low-cost refiners.

May Have to Pay Fiddler

The year, on the whole, was an extremely unsatisfactory one, from almost every point of view. The industry suffered heavy losses, both in current income and in the actual destruction of capital; vast quantities of crude oil had to be carried to storage at great expense, instead of being left in the ground; inventory write downs were drastic; oil securities suffered severe depreciation. The public enjoyed cheap gasoline, but in a manner that will scarcely be left uncompensated in the future. Automobile production was doubtless stimulated by low-cost motor fuel, but the advantage of such a result may be debatable. Overproduction is wasteful; seeming advantages may be unreal, in the last analysis.

Finally, however, in the closing weeks of the year, a change in sentiment and in fundamental conditions began to make its appearance. Low prices had slowed up drilling; the fine demand for gasoline abetted by the retarding effect of low gasoline prices upon refiners, had succeeded in liquidating most of the surplus carryover of gasoline, and above all, the flush fields of the Los Angeles Basin and Powell had passed their peaks and were registering sharp declines. A turn for the better is now in actual process and a brighter future, even a brilliant future, appears to lie ahead.

But a reservation obtrudes itself: Will the industry benefit by the lessons of the past three years and go slow in giving full leash to the stimulus of higher prices, waiting until demand has passed supply by a safe margin? Or will a volatile psychology again predominate and bid up crude oil prices too sharply by adding anticipated requirements to current demands, before a factor of safety has developed? The latter might prove unfortunate in its secondary effects, but oil is not known for conservatism.

Trade Taken by Surprise

Looking back over the year, it would appear that the oil industry was, to a large degree, taken by surprise by each of the outstanding developments that culminated in the market collapse during the last half of the year, and even after these successive developments, with their inevitable implications, became clear to outside observers, the full extent of the consequences was not, apparently, clearly visualized to any great degree within the industry.

As a result, there was an unfortunate lag in the reduction of prices offered for crude oil, the forces making for overproduction were not promptly and decisively enough retarded, a policy of vacillation and temporizing was manifest, and an unsound attempt to minimize the consequences of the law of supply and demand finally resulted in failure. Had a more general knowledge of economic principles obtained, and if these principles had been inexorably applied at the outset instead of as a last resort, the destructive momentum of the industry would have been more promptly checked and the severity of the oil depression would have been minimized.

If any lesson may be drawn from the events of the past three years in oil, it is this: That the petroleum industry needs to have a closer knowledge of its own collective operations, to develop greater skill in diagnosing the condition of its own markets, and to make its price structure more sensitive to changing conditions to the end that a closer balance between supply and demand may be maintained.

If a suggestion may be ventured, in conclusion, it would be this: Let the industry develop prompter statistics, greater skill in their economic interpretation, and the mechanism of an oil exchange to give a freer and more sensitive market to crude oil: and a fundamental step will have been taken towards the stabilization of the whole field of petroleum.

*By permission of the author from the New York Evening Post.

UNION OIL CO. OFFERS RIGHT FOR MORE STOCK

LOS ANGELES, Cal., Jan. 5.—The Union Oil Co. of California will offer to each of its stockholders the right to purchase at par ($100 per share) an amount of its unissued capital stock equal to 5 per cent of their holdings at the close of business January 7, 1924. The additional stock to be sold totals $4,500,000, leaving $500,000 worth of unissued capital stock in the treasury of the company. Certificates of rights will be issued, which may be converted into additional stock upon surrender. The Union Oil Associates will exercise its prerogative and has extended to its stockholders a partial payment plan which requires a $5 per share deposit on or before February 5, 1924, a payment of $14 per share on or before May 5, $13 per share on or before August 5 and $13 per share on or before November 5, 1924. These payments total $45 per share, which is the par value of Associates stock plus the 80 per cent stock dividend of the Union Oil Co. distributed several months ago.

The Shell Oil Co. did not purchase any crude during 1923 and as a result is in a very satisfactory condition, having plenty of available storage for use during 1924 should occasion demand. The Shell will undoubtedly enter the open market and purchase crude during the coming year in southern California and probably at Coalinga if possible. The company ran approximately 100,000 barrels of crude from its Coalinga properties during November and will probably open up additional wells during the coming month. The company's properties in this field have been shut down practically during the entire year. The Shell should also experience a profitable year as its production has been greatly increased during 1923.

COLD CAUSES DROP IN POWELL OUTPUT

CORSICANA, Tex., Jan. 8.—Extremely cold weather caused a let down in field work in the Powell district and resulted in a big drop in the production of wells, many of which were idle Sunday and Monday. Production dropped from 91,000 bbls. on Saturday to 81,000 bbls. on Monday.

Hossiers and others' No. 1 Cerf, on the Smith survey made 350 bbls. the first day from sand at 2,860-2,969 feet.

The Tidal Buttram Oil Co.'s No. 9 Ramsey, found a 150-bbl. initial production in a sand at 1,470-90 feet. It is the first shallow sand producer in the district.

Crude Advance Aid to Refined Market

Higher Crude Prices Expected to Give Additional Impetus to Upward Trend in Group 3 Refined Products. Fuel Oil Contracts to Be Adjusted

By C. O. Willson

The action of the Prairie Oil & Gas Co., Wednesday morning, in advancing its posted price on Oklahoma, North Texas and Kansas crudes was the most important development of the week affecting Group 3 refined markets. The action came at the close of a 7-day period which had witnessed another advance in Group 3 refined markets applying to practically all the principal products.

Although at this writing (Wednesday) it was not possible to determine the full effect of the latest crude advance in refined markets there can be no question as to its importance. It was the development most needed to back up the advance in refined products in Group 3 and the Mid-Continent area generally, which has been under way since the first of December and which has been largely built up on the expectation that crude prices initiated by the Prairie Oil & Gas Co. would materialize in the near future.

Prices Going Up

Although it will be claimed by some that the present crude advance has already been anticipated by higher prices in refined products there was considerable evidence Wednesday that prices would continue to mount, especially gasolines and fuel oils. There are several reasons for these further increases in refined products. The Prairie's advance was needed to give assurance that crude prices in the Mid-Continent were to experience a general advance. Its action in meeting the crude schedules of The Texas Co. and Magnolia Petroleum Co., established December 27 and December 28, and then raising the price 10 cents, was interpreted in refinery circles to mean that additional advances are to come in the near future. In that connection it will be recalled that since the Prairie Oil & Gas Co. adopted the gravity plan in its crude purchases it has been generally customary for the company to advance or lower the posted schedules 10 cents at a time. The past history of the Prairie also shows that the company does not stop with one change but follows the first with several more, all coming within a period of several days of each other. Past customs in the oil business are not an accurate basis on which to gauge future conditions, but in the Prairie's case it is worthy of consideration as indicating crude price trends.

Due to this situation and the further fact that Pennsylvania crudes were advanced from 65 to 80 cents previous to the Prairie change, the refining and marketing fraternity of Group 3 Wednesday were expecting additional crude advances in the Mid-Continent area in the near future. The refined market importance of an advancing crude market is known to everyone connected with the marketing end of the industry. Prices on refined products especially gasolines, invariably follow or lead the crude advance. In this situation there are those who believe that both the crude and refined market advances are premature as was the case last year at this time, but this feeling is not general enough to prevent an upward price tendency.

Effect on Tank Wagon

The Prairie's advance in crude is also important in its probable effect on the gasoline tank wagon structures of the Middle West and Southwest, in which refiners of Group 3 and the Mid-Continent area generally dispose of their gasoline output. There has been a general feeling in marketing circles for several months that the Standard of Indiana company would not bring about any substantial advances in the tank wagon structure of the Middle West until crude prices were increased. Although there is a much closer relationship between gasoline prices at the refinery and tank wagon schedules than between crude and tank wagon, there was undoubtedly some merit to the contention that higher prices to the consumer would not materialize until production costs had advanced through higher prices for the raw material. It is generally felt that, due to the many investigations by State and Government agencies during the past year, there would be a return in the future to the establishment of a closer relationship between all the price schedules which enter into the production and distribution of gasolines.

Briefly expressed then the latest crude change is interpreted to mean not only that other crude advances will materialize in the near future but also that the Standard of Indiana tank wagon price structure, already advanced 2 cents, will continue upward. The refiners already have their gasoline prices high enough to justify a 2-cent advance in the tank wagon prices and faced with higher crude costs they will undoubtedly see that this needed relative position is maintained.

Fuel Oil Contracts

The most important immediate effect of the Prairie advance has to do with fuel oil. By adopting The Texas Co. scale of four prices, the Prairie made another adjustment necessary in the long time fuel oil contracts which a majority of the refiners have with railroads and other large fuel oil users. When the Prairie Oil & Gas Co. adopted a three-schedule scale on September 19, most fuel oil contracts were adjusted on a basis of the middle schedule. That is, the refiners secured 60 per cent of the Prairie's posted price for crude of 33° to 39.9° basis. Under the new schedule of prices crude of this gravity is split up in three scales of 33° to 35.9° and 36°, 38.9° and 39° and above.

Although the buyers and sellers had not had time at this writing to get together for an adjustment of this situation, inquiry among representative refiners indicated that they would insist on a price based on the average price obtained for crude of from 33° to 39.9° gravity. At the present time this would mean an average price of the $1.25, $1.40 and $1.50 schedules, or $1.383. Those contracts which are based on 60 per cent of the Prairie crude prices would then net the refiner 83 cents. Not all contracts specifically provide that the price for crude of 33° to 39.9° gravity shall be used as the basis for the fuel contracts. In these cases some other schedule may be the basis of adjustment. The fact that very little fuel oil is available at this time on the spot market under $1 in Group 3, will cause refiners to seek as high a basis as possible with little doubt but what their wishes will be accepted by the buyers.

Advancing Tendency

Without the aid until Wednesday of either a crude or tank wagon advance of importance in the fields and marketing territory immediately affecting the refining area of Oklahoma, the Group 3 refined prices continued to climb during the past week at a rate in keeping with the general price improvement which has been a weekly development since the first of December. The only exception to the unchanged tank wagon situation up to this writing was the 2-cent advance in the gasoline tank wagon at several points in Oklahoma, announced Monday by several companies and which become general throughout the State Wednesday. However, the refinery prices reached their Wednesday level previous to this tank wagon advance. It is also true that changes in the Oklahoma tank wagon prices have little effect on Group 3 prices, regardless of whether the changes are up or down, due to the fact that the bulk of the refinery output is disposed of outside the State.

Market observers who the fore part of last week said refinery prices in Group 3 would not go higher guessed wrong. The price tendency on practically all products continued upward all of last week and by Saturday had reached their present level. Although, as usual, the most spectacular and most talked of advance during the past week was that of gasolines, practically all other products experienced a very apparent price improvement.

Improved Demand

Practically all grades of fuel oil and kerosenes and other products which follow their lead advanced in price with material offered in comparatively small quantities. All plants making fuel distillates reported a heavy demand. Some refiners said they were unable to supply their regular jobbing trade and they were in the market endeavoring to supplement their own output with outside purchases. This improved demand is entirely due to the cold weather. Jobbers' stocks are not large and when the cold weather came over night many of them did not have stocks sufficient to supply the enlarged demand more than a few days. As a result there was a rush for immediate shipments and where the buyers were not protected by contract or verbal agreement, they were compelled to pay from ¼ to ½ cent above the quotations which had previously prevailed since early fall.

There were several developments of interest in the gasoline situation during the past week. The fact that prices on straight run gasolines, nautral gasolines and blends all advanced without the aid of a tank wagon or crude advance was in itself encouraging to the refiners, who are hoping for a price situation throughout the year 1924, which will enable them to retrieve the losses of the previous year which many have verified during the past week in making up their yearly reports.

Encouraging Factors

Another encouraging development lay in the offers of several large buyers [illegible]

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REFINED MARKET BAROMETER

Refined markets throughout the United States during the past week witnessed the most general price advance that has occurred since the early part of last year. With the exception of the Atlantic Seaboard area these higher prices applied to practically all products except neutral oils and important advances were made on several grades of this product in Pennsylvania and Mid-Continent areas. Due largely to further advances in crude, refiners and natural gasoline manufacturers again advanced their prices from ¼ to 1 cent in a majority of the refining areas. The demand for fuel distillates continued to improve and this product, together with kerosene, was advanced in price except in the East. Fuel oils and other fuel products advanced in price with a fair demand.

Mid-Continent—Prices advanced on practically all products. New Navy gasoline advanced from ¼ to ¾ cents in the several areas with corresponding advances in other straight run products including naphtha. All grades of blends advanced from ½ to 1¼ cent. Natural gasoline prices higher on all grades with little Grade A available. Kerosene and distillate prices advanced from ⅛ to ½ cent with strong demand for the latter reported from all areas. Fuel and gas oils also advanced in all areas with little material available for immediate shipment. Strong demand for neutrals with a general price advance expected.

Atlantic Seaboard—Export prices on gasolines and naphthas advanced 1 cent. Domestic market generally firm with prices higher where there were any changes. Due to generally strong gasoline price situation at the refineries a 1 to 2-cent advance in tank wagon prices is expected daily. Fair to strong movement of all products with a noticeable improvement in the demand for fuel distillates. Receipts of crude and refined products from California and Gulf Coast increased for the week.

Pennsylvania—Improved demand for practically all products and prices are generally higher with the exception of kerosenes. Strong demand for gasolines due in part to the advancing prices in the Mid-Continent area and refiners have advanced their quotations from ¼ to ½-cent on the motor fuel grades. Tank wagon advance expected. Strong demand for all grades of lubricants with prices generally higher.

Chicago—Market continues strong with no indications of weakness. Prices on all grades of gasolines including natural gasolines and blends higher. Heavy consumption of gasoline despite cold weather period. Kerosene prices firm. Fuel oil and gas oil prices generally higher.

Gulf Coast—Demand for zero cold test lubricants improved following holiday lull with prices advanced ½ cent on a few grades. Trade generally feels that crude prices in the Gulf Coast region will be advanced again before end of the month resulting in higher prices for cold test oils. Contracts now being made on basis of 1 cent a gallon increase in price for each 25-cent advance in price of crude. Gas oil stronger with bulk of movement at 4 cents with many plants holding for 4½ cents. Fuel oil unchanged.

REFINERS TO HOLD MEETING IN DALLAS FROM MARCH 4 TO 6

The annual convention of the Western Petroleum Refiners' Association will be held at the Adolphus Hotel, Dallas, Tex., March 4, 5 and 6. Plans are now being perfected which will assure one of the most interesting conventions that has ever been held by the association. George D. Locke, vice president of the Barnsdall Refining Co., is chairman of the committee on arrangements.

Refinery Runs Increase 24,460 Bbls.

New Plants Partially Account for Greater Throughput in Mid-Continent. Ninety-three Have Been Shut Down Over a Year

By C. O. Willson

Due entirely to the starting up of two large refineries and increased runs at major plants already in operation Mid-Continent refinery runs for January 1 showed an increase of 24,460 bbls. daily over totals run for December 1. The new refineries of the Roxana Petroleum Corp., located at Arkansas City, Kans., and that of the Humble Oil & Refining Co. located at Corsicana, Tex., accounted for 11,500 bbls. of the total increase. The Roxana plant which has been under construction for several months started operating the latter part of December and the first of the new year was running 5,000 bbls. daily through its stills. Additional units of the plant are to be completed in the immediate future and it is expected that it will soon be handling in excess of 10,000 bbls. of crude daily.

The other plant which started operating since the December report was the Humble plant. It is now handling 6,500 bbls. daily, a throughput which represents its approximate capacity.

Larger Plants Increase Runs

From a study of the runs of individual plants as given in the accompanying tables covering Oklahoma, North Texas, north Louisiana, Arkansas and Kansas operations it will be noted that outside the two new plants just mentioned the increase in runs comes from the larger plants already operating. This includes the Standard Oil Co. of Kansas at Neodesha, Kans., the Sinclair plants in Oklahoma and Kansas and The Texas Co. plants. In view of this fact it can be said that there has been only a slight increase in Mid-Continent refinery runs as confined to plants considered strictly independent. The operations of these independent plants January 1 varied in several instances from the operations December 1 but increases in individual plants was largely offset by decreases in others so that the total increase was small.

Despite the 24,460 bbls. increase in runs, total runs for the Mid-Continent area are still 41,152 bbls. daily under the total runs for January 1, 1923, as shown in Table 3. It will be recalled that January runs for 1923 were the largest in the history of the Mid-Continent Field. Oklahoma runs are now 25,502 bbls. under the peak period of last year, North Texas 15,850 bbls. and Kansas 5,650 bbls. The North Louisiana and Arkansas areas show increases of 1,450 and 3,950 bbls., respectively, over January of last year.

As previously indicated, the significant feature of the January report lies in the increased runs of the major refineries. The Sinclair Refining Co. was running 20,550 bbls. through the stills of its four Mid-Continent plants the first of January, an increase of 3,000 bbls. over December 1. Cosden & Co. runs are up 2,000 bbls., while those of the Empire, Standard of Kansas, The Texas Co., Lion Oil & Refining Co. and several other large companies showed substantial increases. It is probable that the increased runs in a general way can be accounted for as being due to the improved situation in refined markets. The larger companies have considerable storage available for gasoline and other refined products and due to the expectation of higher prices they are increasing their runs to stills. A number of the smaller plants have the storage capacity but due largely to the financial losses of the past are either not able to finance any large storage programs or fear to do so at this time, fearing a repetition of last year's experience.

In the event that the refined market situation continues to improve it is probable that the small plants as well as the large concerns will increase their runs, storing the surplus over current consumption, in expectation of the large gasoline demand starting with the spring months. Despite the unfavorable situation of the past year for the average Mid-Continent refiner, it is apparent that just as soon as the market situation justifies the change, an increase in the total refinery runs for the entire area will probably establish a new throughput record. It is equally apparent however, that this increase must come primarily from the larger plants.

RECAPITULATION MID-CONTINENT REFINERIES

Table 1

Based on refineries which have been in operation during the past year.

	No. of Plants	Capacity	Plants Op. Jan. 1	Daily Runs Jan. 1
Oklahoma	68	288,100	50	137,575
North Texas	45	159,200	32	64,350
Kansas	30	116,900	22	66,800
North Louisiana	6	25,300	5	21,250
Arkansas	14	33,950	7	13,250
Total	163	623,450	116	303,225

Table 2

Based on operations of all plants as of January 1, 1924, and December 1, 1923.

	No. of Plants	Capacity	Plants Op. Jan. 1, '24	Daily Runs Jan. 1, '24	Plants Op. Dec. 1, '23	Daily Runs Dec. 1, '23	Daily Inc. in Runs
Oklahoma	103	369,000	50	137,575	50	126,425	11,150
North Texas	70	217,350	32	64,350	34	61,040	3,310
Kansas	43	131,100	22	66,800	22	58,200	8,600
North Louisiana	19	48,950	5	21,250	5	20,500	750
Arkansas	17	37,950	7	13,250	8	12,600	650
Total	256	804,350	116	303,225	119	278,765	24,460

Table 3

Based on operations of all plants as of January 1, 1923, compared to January 1, 1924.

	No. of Plants	Capacity	Plants Op. Jan. 1, '23	Daily Runs Jan. 1, '23	Daily Inc. Over Jan. 1, '24
Oklahoma	103	334,627	65	162,627	25,052
North Texas	62	196,800	33	80,200	15,850
Kansas	38	101,900	24	72,450	5,640
North Louisiana	19	38,850	5	19,800	*1,450
Arkansas	14	23,510	9	9,300	*3,950
Total	236	694,160	126	344,377	41,152

*Decrease.

Oklahoma

The 11,150-bbl. increase in Oklahoma refinery runs could be accounted for by half dozen companies. In addition to the increase already noted the Waite Phillips Co. has boosted its runs from 3,500 to 4,500 bbls. daily, Producers & Refiners Corp. increased 750 bbls., and Tidal 1,300 bbls. The same number of plants were in operation January 1 as December 1. Outside of the plants already noted there were no other important changes in Oklahoma operations.

Kansas

Due to the new plant of the Roxana Petroleum Corp. at Arkansas City, the total Kansas runs are larger than those of the North Texas area and it now ranks second in refinery output for the Mid-Continent area, although its total potential capacity is approximately 85,000 bbls. daily less. On January 1 the operations of the Sterling Oil & Refining Co. at Wichita were confined to rerun. It is understood however that the company, which was recently placed in the hands of a receiver, intends to continue crude runs in the near future. In addition to the Standard of Kansas and Sinclair increases the White Eagle Oil & Refining Co. increased its runs from 5,000 bbls. to 6,250 bbls. daily.

North Texas runs would have shown a decrease but for the new Humble plant as the total increase including the Humble output was only 3,310 bbls. daily. The runs of several plants decreased with only a few showing increases. The plant of the Interstate Refineries, Inc., at Iowa Park, was temporarily shut down on January 1, but this loss was offset by the plant of the Iowa Park Producing & Refining Corp., which resumed operations.

Arkansas

In Arkansas, the Lion Oil & Refining Co. at El Dorado increased its runs from 6,000 bbls. daily to 7,500 bbls. The runs of the Root Refineries, El Dorado, on December 1 were 2,000 bbls., but had decreased to 1,000 bbls. on January 1. There were no other important changes in operations.

North Louisiana

The runs of the Caddo Central Oil & Refining Co. decreased from 8,500 to 7,000 bbls. daily in the January and December reports. This loss was more than offset by the increase in the runs of the Louisiana Oil Corp. from 4,000 to 6,000 bbls. daily.

New Table

Attention is called to the new table covering refinery operations. This Table 1 is based on plants which have been in operation during the past year. The table by being limited to plants which have been in actual operation during the past year eliminates a large part of the "dead wood" of the Mid-Continent refining area and probably gives a more accurate conception of refinery capacity and operations than does the other tables based on all the plants.

The new table shows that 93 plants in the Mid-Continent area have not been in operation during the past year. A large majority of these plants will probably never be in operation again and for that reason the refining capacity of those plants can be discounted 100 per cent in gauging the total capacity of the Mid-Continent area. A few of the plants will probably resume operations during the coming year providing market conditions are favorable. Many of the plants are already partially dismantled and others have been shut down so long that extensive repairs would be necessary before crude could again be run through their stills.

In the following checks covering the operations of individual refineries, those plants have been dropped which have been shut down one year or longer. A list of these plants with their capacities will be furnished anyone desiring a complete list of plants.

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REGULATIONS FOR OIL BURNERS APPROVED BY FIRE UNDERWRITERS

By Ralph T. Baker

CHICAGO, Jan. 7.—Not all oil burners are plumbers' contraptions, but on the contrary, quite a few are proving themselves to be the logical results of a great outlay of scientific research and engineering ability, coupled with a remarkable knowledge of general conditions and the American public, according to recent developments at the Underwriters' Laboratories, Chicago, where many of these new burners are tested and passed upon.

To date 10 burner outfits have passed the requirements of the examiners and have been given listing by Underwriters' Laboratories. In its recent catalog, mention is made as follows:

"The oil burners listed by the following manufacturers as standard may be permitted for use when installed according to the requirements of the National Board of Fire Underwriters for the class, if not in violation of any State law or local ordinance and if the company insuring the property consents to the same in writing on its policy.

"Domestic oil burners, which may be used where a competent attendant is not constantly on the premises, are provided with automatic means for closing the oil supply to the burner in event flame is extinguished. These devices are provided with thermostatic temperature regulation means otherwise specified in the individual card text."

The listing follows:

Caloroil and Caloroil "Type A." Caloroil Burner Corp., New York City, N. Y. Oil burner designed to burn kerosene, or distillate of 36-40 degrees Baume—for installation in various types of hot-water heaters, steam boilers, and hot air furnaces.

This and the eight following are standard when fuel storage capacity conforms to local requirements and installation is made in accordance with requirements of inspection departments having jurisdiction.

Kleen Heet. Winslow Boiler & Engineering Co., Chicago, Ill. Oil burner designed to burn kerosene or distillate of 36-40 degrees Baume, for installation in various types of hot water heaters, steam boilers and hot air furnaces.

Lillibridge "Types 38-D, 68-D, 99-D, and 9-11-D." Lillibridge Heating Corp., Hutchinson, Kans. Manually controlled oil vapor burner, designed to burn kerosene or distillate of 36-40 degrees Baume, for installation in hot water and steam boilers.

Nokol. American Nokol Co., Chicago, Ill. Oil burner designed to burn kerosene, for installation in hot water heaters, steam boilers and hot air furnaces.

Scott-Newcomb. Home Appliance Corp., St. Louis, Mo. Oil burner designed to burn kerosene or distillate of 36-40 de-

(Continued on Page 106)

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MEMBER AUDIT BUREAU OF CIRCULATION

IF WHEAT, WHY NOT OIL?

Reduction of America's wheat acreage to insure against overproduction is endorsed by President Coolidge in a letter to the Wheat Council of the United States. "The effort, in an organized and systematic way, to establish such measures of control over the wheat acreage as will measurably insure against overproduction is altogether to be commended," the President writes.

This news should be of special interest to Senator LaFollette, who is so anxious to have the United States Government prohibit any attempt to insure against overproduction of oil.

If overproduction of wheat is to be prevented lest it bankrupt the producers, why should not the producers of oil in similar peril during the past year be permitted to establish such measures of control over oil production as will measurably insure against overproduction?

For that matter, is there not more urgent argument for protection against overproduction of oil than for the reduction in wheat acreage? Wheat is a routine crop which may be enlarged or reduced almost at will. Oil is unknown and uncertain. We have it today and no one can say how much we may have six months hence. Yet the whole country has seen it pouring prodigally for nine months, in volume far exceeding world requirements, forcing prices for crude and refined below the actual cost of production, without a single voice being raised to urge the wisdom of allowing the industry to adopt measures of conservation.

If Senator LaFollette admits the wisdom of allowing wheat producers to reduce their acreage to keep up prices to a living level, how can he take an opposite stand in refusing to allow the oil industry to protect itself against bankrupt prices? Instead of framing restrictive legislation to hamper the oil industry he should be busying himself to assure oil men the same privilege of self-protection he asks for the farmers.

The President's approval of the one implies like endorsement of the other. Of the two the case for the oil industry is the stronger and the more unanswerable.

GROPING IN THE DARK

Principally owing to the lack of reliable general information, the petroleum industry is, in many ways, groping in the dark.

That is the startling indictment formulated by Raymond Foss Bacon, then director of the Mellon Institute of Industrial Research of the University of Pittsburgh, an institution that has contributed notably valuable scientific discoveries to the oil industry.

The statement is made in his volume, "The American Petroleum Industry," in which he adds that "the same errors are repeatedly made in the same territory by different operators, and in both drilling and refining the various factors having a known influence are imperfectly understood in their relation to one another. It is essential, particularly for the future welfare of the industry, that there be an increment in research activity; this may be brought about in a measure by the organizations represented in the petroleum industry and by our highly efficient Bureau of Mines, but **there must be greater cooperation between petroleum industrialists and the universities and scientific societies, if the desirable fruitful research is to be stimulated."**

Dr. Bacon tersely summarized the factors which have operated to delay this consummation in a national institute of petroleum research. Some regard their technology as an hereditary art, content with the methods handed down by their predecessors. Some have advantages in raw material or in a large demand for their products. Others cling to the belief in competition rather than cooperation.

These forget that an industry working with a limited natural resource of world-wide necessity is greater than any personal or corporate interest and must evolve the highest efficiency and conservation if it is to survive and the demand is to be satisfied.

That is the thought which prompted the recent suggestion in these columns urging consideration of the creation by the industry as a whole of such a National Institute of Petroleum Research. An intensive study of increasing oil recovery should, moreover, have a personal appeal to every producer with a dollar invested. It will visualize the possibility of reviving old fields, as well as increasing the output of the newer.

Information and experience obtained, for instance, through "flooding," as in the Bradford Field; the use of compressed air, live steam, etc., in others, is naturally held as semi-secret and not disseminated 100 per cent. The proposed institute would scientifically study the subject and gather information to be pooled for the free use of all. A single improvement in this direction would justify the existence of the institution for a lifetime.

The industry has need of a great central bureau to gather, hold and distribute valuable scientific and mechanical data. As the situation now exists, much of this is absolutely lost.

Individual theories are conceived, and perhaps tested, in field or factory; experiences, sometimes accidental in actual work, suggest improvements of inestimable value. The industry has been enabled to meet a demand that would long ago have exhausted its readily accessible supply of raw material only through the discovery of new processes that immensely enlarged its output of manufactured product, and through improved methods of recovering oil from the earth. If the supply is to be kept abreast of the expanding need for petroleum products inventions and discoveries even more amazing than those of the past must be made in the near future.

Research, ceaseless and universal, will be necessary to accomplish this. It will be a task beyond the capacity of any one factor in the industry; a problem national and even international in scope. Research prompted by a limited motive, the needs of one group or interest, is necessarily limited in operation. It must be as broad as the whole industry, as wide as the world, if the highest possible results are to be obtained, and they must be obtained since we cannot afford to waste this element so vital to our modern life and yet so limited in visible supply.

That is the broad, general necessity, but there is also a personal incentive, the possibility of increasing the bank balances of those in the industry. Enormous results would naturally follow a successful campaign of vigorous research. The wealth gained through the inventions, processes and discoveries now in use show that. Yet our present situation has been reached through a process of natural evolution in which the domain of science has played too small a part, considering the profitable rewards. There is surely a world of profitable work and more profitable organizing to be done in the direction of conserving the oil industry.

The creation of a National Institute of Petroleum Research, by and for the industry, would provide a body of experts which could study and solve its problems and light the way to greater achievements, fuller utilization and richer rewards.

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COUPLINGS

Securities Irregular on Profit Taking

Oil Situation Regarded as Favorable. Feature of Recent Upward Movement Was the Rise of Prairie Oil & Gas

By N. O. Fanning
Room 525 No. 30 Church St., New York

NEW YORK, Jan. 7.—Oil securities were irregular during the past week. This marked the first real break in the upward movement in oil stocks which began about two months ago, and was a very natural result of profit taking following the opening of the New Year. It is believed that many who had had paper profits due to the rapid rise in oil securities waited until the New Year to realize on them so that the taxes on such profits would not have to be paid until 1923. There is also a possibility of taxes for 1924 being lower than those for 1923.

Despite this profit taking the action of oil stocks was quite reassuring. Declines from the high prices reached just before the close of 1923 were in most cases small. So far news on the oil situation has continued to be favorable, so that from this viewpoint there should be further buying rather than selling. This is reflected in the resistance of oil stocks to profit taking.

Just before Christmas and up to the close of the year the outlook for 1924 was generally regarded as extremely encouraging. This feeling was helped along by the Christmas holiday spirit, of course, and from a psychological viewpoint a reaction after New Year's Day was not surprising. The outlook does not appear to have changed from that which existed before the holidays.

Prairie Oil & Gas

No doubt the feature of the recent upward movement in oil stocks was the spectacular rise in the stock of the Prairie Oil & Gas Co., and the manner in which this rise has been maintained. From a low of 152 in 1923, the stock advanced to 269, a gain of 117 points. Later the stock reacted to around 255, still, however, 103 points above the low of 1923.

The rise in the price of Prairie stock and that of such companies as Cosden & Co., Marland Oil and Phillips Petroleum would naturally be based on a resumption of buying of Mid-Continent crude and refined products by Atlantic Coast refiners, for it is doubtful whether the surplus output of that region could be marketed elsewhere. The Standard Oil Co. of Indiana is also expected to increase its purchases of Mid-Continent crude, but this will probably be largely through Sinclair Crude Oil Purchasing Co., in which it has a 50 per cent interest, and which is said to have very large stocks of crude on hand.

Provided there is a resumption of buying of Mid-Continent products on the part of Standard of Indiana, New Jersey and other big units outside that region, such buying would have to be at considerably higher prices, it is believed, in order to bring prosperity to the Mid-Continent producers. It is generally believed that higher prices are due.

California Situation Bright

Wall Street is inclined to be bullish on the California oil stocks now, believing that the price of crude on the Pacific Coast is due for an advance, and that in 1923 concerns in that field sold a great deal of oil to Atlantic Coast refiners at a profit. Some significance is attached to the fact that the securities of the Standard Oil Co. of California, Pacific Oil Co. and Associated Oil made new highs for 1923 on the recent upturn, whereas other oil stocks, although showing big advances, did not break through or even reach their previous high marks. Standard of California has a substantial interest in Pacific Oil, and the latter concern controls the Associated Oil Co. It so happens that the properties of these three concerns are close together geographically, especially the oil acreage, so that a union of the three interests should strengthen all of them, and furthermore should form one of the biggest oil organizations in the country.

In some quarters 1924 is looked upon as a year of prospective oil mergers. Three big Standard Oil units are mentioned, and sometimes four, in connection with consolidation. These are the Standard Oil Co. of Indiana, which is said to be seeking an outlet on the Gulf or Atlantic Seaboard; Standard Oil of California, which is reported to have increased its holdings of Pacific Oil recently; Prairie Oil & Gas, which may ultimately absorb some Mid-Continent refining and marketing properties, and Ohio Oil, which has been reported as contemplating branching out into refining and marketing, following the lead of the Prairie.

Such consolidations as those mentioned would undoubtedly strengthen the petroleum industry greatly in the way of stabilization.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stock	Par	‡Dividend Rate	Closing Quotations Jan. 8	Dec 31	Range 1923 High	Low
1.	Associated Oil	25	6	29	29½	29¼	29½
2.	Atlantic Refining, common	100	4	129	132½	160	98¾
3.	Barnsdall "A"	25	..	15⅝	16¼	35	9⅞
4.	Caddo Central Oil	..	..	2⅜	*2	9⅛	1½
5.	California Petroleum, common	25	7	25⅛	26⅝	29⅛	17⅛
6.	Cosden & Co., common	..	..	35	35⅝	62¼	22¾
7.	General American Tank	..	†3	45⅞	45½	71⅝	40
8.	General Asphalt	100	..	43⅛	40¾	54	23
9.	Houston Oil	100	..	69⅞	71	78	40¾
10.	Independent Oil & Gas	10	..	*6	*6½	11¼	3⅝
11.	Indiahoma Refining	25	..	2	1⅝	9	1⅛
12.	Indian Refining	10	..	*5	*5	8½	4
13.	Invincible Oil	50	..	15⅞	16⅞	19¼	7⅛
14.	Maracaibo	..	..	27¼	26⅞	28¼	16
15.	Marland	..	..	36¼	38⅛	59⅝	18⅛
16.	Mexican Seaboard	..	..	14½	14	19⅝	5⅝
17.	Middle States Oil	10	..	6	6⅝	12¼	3½
18.	National Supply	50	6	68	68	68	54
19.	Pacific Oil	..	†2	49¾	51	52⅛	31½
20.	Pan-American, common	50	16	55¼	61½	93½	53
21.	Panhandle Prod. & Ref.	..	..	2½	*2	6¾	1¼
22.	Phillips Petroleum	..	†2	35⅜	35½	69⅝	19⅜
23.	Pierce Oil, common	25	..	2½	2⅛	6	1⅛
24.	Producers & Refiners	50	..	35¼	41¼	58¼	17⅛
25.	Pure Oil Co., common	25	6	23⅞	24⅜	32	16¼
26.	Royal Dutch, N. Y., sh	13.40	2.62	49⅝	48½	55⅛	40½
27.	Shell Transport	10	x92½	33¼	*32½	41¼	29½
28.	Shell Un.on, common	..	†1	16⅝	17	19¼	12⅝
29.	Simms Pet.	10	..	11½	11½	16⅝	6⅛
30.	Sinclair Consolidated, common	..	†2	26¼	27	39⅜	16
31.	Skelly Oil	25	..	25	25⅞	35	12½
32.	Standard of California	25	8	63½	64⅜	64½	47⅛
33.	Standard Oil of N. J.	25	4	40½	41⅞	44¼	30⅞
34.	Standard of New Jersey, pfd.	100	7	117¾	*116½	118¼	114¾
35.	Superior Oil	..	..	3	*2	6¾	2
36.	The Texas Co.	25	12	43¾	44¼	52⅞	34⅝
37.	Texas & Pacific Coal & Oil	10	..	10⅝	11⅝	24⅝	5⅛
38.	Tide Water Oil	100	4	122	*122⅞	144	94
39.	Transcontinental	..	..	4⅛	4⅛	14½	1¼
40.	Union Tank, preferred	100	7	*108	*106	114	106
41.	White Eagle Oil & Ref.	..	2¼	26	26⅜	30⅜	20⅛
	Standard Oil Stocks						
42.	Anglo-American Oil	£1	20	16	16⅛	19⅜	13½
43.	Borne Scrymser	100	12	155½	*146	153	110
44.	Buckeye Pipe Line	50	14	77½	76½	94	69
45.	Chesebrough Mfng., com.	100	14	*240	*233	340	205
46.	Continental Oil	25	8	44	43⅝	60	32½
47.	Crescent Pipe Line	25		*17	*15	25	16
48.	Cumberland Pipe Line	100	10	115	*106	117	80
49.	Eureka Pipe Line	100	8	*99	101	117¼	87
50.	Galena-Signal, common	100	4	66	68	78	55
51.	Humble Oil & Ref.	25	4.8	38½	41	41	28¼
52.	Illinois Pipe Line	100	16	141	141	171	115
53.	Imperial Oil, Ltd.	25	16	114	117	123	92
54.	Indiana Pipe Line	50	16	92	90	103	81
55.	Intl. Pet. Co.	..	x50	20⅜	21⅜	24¾	13¼
56.	Magnolia Pet.	100	4.5	159	162	166	123
57.	National Transit	12.50	16	24¼	*21¼	29	19½
58.	New York Transit	100	10	92	78	138	70
59.	Northern Pipe Line	100	25	95	*91	111	96
60.	Ohio Oil Co.	25	4	75½	75	85¾	48¾
61.	Penn-Mex Fuel	25	..	*38	*45	45	10½
62.	Prairie Oil & Gas	100	8	257½	263	272	152
63.	Prairie Pipe Line	100	8	106	107½	117	93
64.	Solar Refining Co.	100	15	187	176	212	161
65.	Southern Pipe Line	100	16	*96	91½	116	87
66.	South Penn Oil	100	..	162	176	196	100
67.	South West Pa. Line	100	8	*82	*77	89	66
68.	Standard of Indiana	25	10	65⅞	67½	69⅞	49½
69.	Standard of Kansas	25	8	47¼	47⅝	56¼	36½
70.	Standard of Kentucky	25	16	108	109½	109½	76
71.	Standard of Nebraska	100	20	208	*228	280	186
72.	Standard Oil of N. Y.	25	5.6	45⅝	47⅛	49⅝	35½
73.	Standard of Ohio, common	100	10	310	320	320	270
74.	Swan & Finch	100	..	*35	*36	38	21½
75.	Vacuum Oil	25	10	58	58¼	55½	40
76.	Washington Oil	10	..	25	*21	28	20¼
	Miscellaneous Stocks						
77.	Cities Service, banker's shares	..	‡21	*14	15	18½	12¾
78.	Gulf Oil Corp. of Pa.	25	6	*60	62¼	68¼	45¾

*Bid, no sales. †In dollars. ‡6 per cent in cash and 15 per cent stock dividend declared; now being paid in scrip. §The figures carried in this column are kept up-to-date as far as possible but are not guaranteed. xCents per share.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange weekly was as follows:

Jan. 8	52.68	Nov. 27	47.74	Oct. 16	42.80
Dec. 30	53.77	Nov. 20	45.26	Oct. 9	43.29
Dec. 24	52.25	Nov. 13	43.84	Oct. 2	43.53
Dec. 18	51.20	Nov. 5	42.60	Sept. 25	42.48
Dec. 11	49.27	Oct. 30	41.66	Sept. 18	41.42
Dec. 4	48.66	Oct. 23	42.42	Sept. 11	44.78

Another direction in which corporate developments of an interesting nature may transpire in 1924 is that of foreign fields. Much new activity is reported in Colombia, Venezuela, the Dutch East Indies, Persia and other fields, with the purpose of developing a really big output to offset possible losses in the United States and Mexico.

Gulf Oil Financing

A syndicate composed of the Union Trust Co., Mellon National Bank, Pittsburgh, and the Guaranty Trust Co. and National City Bank of New York, has underwritten $16,000,000 serial debenture 5½ per cent bonds of the Gulf Oil Corp. of Pennsylvania. Offering is being made at prices to yield 5.25 to 5.00 per cent. The bonds will mature on January 1, 1925 to 1928. Proceeds will be used to pay off all bank loans and to reimburse the company for capital expenditures made during 1923.

The Gulf Oil Corp.'s balance sheet of September 20, 1923, after giving effect to the present financing, shows current assets of $79,034,588, or more than 6.8 times current liabilities, according to W. L. Mellon, president.

According to Mr. Mellon, the company has 4,000 wells producing more than 100,000 bbls. of oil per day. Its Port Arthur refinery refined more than 35,000,000 bbls. of crude in 1923. It markets oil in the Southwest and Atlantic Seaboard territories through some 9[illegible] service stations.

Salt Creek Producers

The board of directors of the Salt Creek Producers' Association has increased the quarterly dividend payment on the company's capital stock by an extra dividend of 25 cents a share in addition to the regular quarterly payment of 20 cents a share, both dividends being payable February 1 to stockholders of record January 15. This is equivalent to increasing the annual rate on the stock from 16 to 18 per cent.

According to reports, the Mountain Producers' Oil Co., which is virtually under the same management, will also increase its annual dividend rate at the next meeting by increasing the extra payment which is now being made in addition to the regular quarterly distribution.

TO PREVENT POLLUTION

AUSTIN, Tex., Jan. 7. — Officials of the state game department, health department, and oil and gas conservation bureau of the railroad commission, will go this week to Luling to work out with oil operators adequate anti-pollution measures to prevent oil waste and salt water from flowing into the San Marcos River. Prompt steps will be taken, it was announced, to prevent destruction of fish in the river, and to save what is regarded as one of the most beautiful streams in Texas, from oil film and from oil-coated banks with grass and moss killed off along the water line.

CHAPIN VISITS TULSA

Newton Chapin, president of the Lee C. Moore Co. of Pittsburgh, Pa., arrived in Tulsa the fore part of the week. He is visiting old friends in the Mid-Continent area while making his headquarters at the Tulsa offices of the Lee C. Moore Co.

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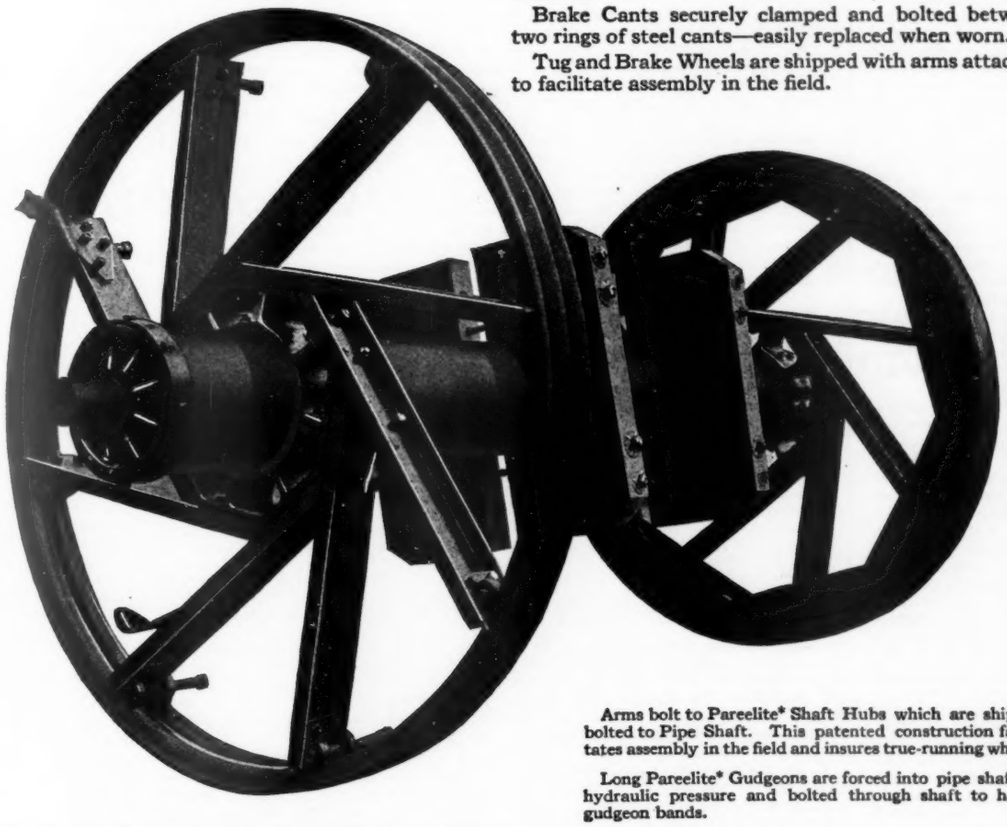

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More Oil Through Closer Spaced Wells

Standard of California Opposes Familiar Theory That Wide Spacing Is Best; Cites Experience and Authorities

By G. C. Gester, S. H. Gester and E. W. Wagy
Petroleum Engineers, Standard Oil Co. of California

"True conservation," as defined by S. S. Wyer, formerly of the United States Fuel Administration, "is not hoarding, but the wise use of natural resources, and it implies not merely the preserving in unimpaired efficiency, but also a wise and equitable exhaustion with a maximum efficiency and minimum waste." True conservation of our natural oil and gas resources implies the ultimate recovery of the maximum amounts of the products of each field.

Discounting the economic factors involved and considering the natural resources only, an interesting speculation arises as to how the maximum amounts of oil may be recovered. Alleged waste of oil and gas by intensive drilling on town-lot areas has been given much publicity during the last two years in the development of the Los Angeles Basin fields in southern California. Statements have frequently been made of the flagrant waste of the State's oil and gas reserves. But has there been an actual waste of these products, which some critics would lead us to believe, or has this close spacing of wells and their completion within a short period of time proved to be one of the important factors in the high productivity per acre found in those fields?

Question of Gas

Gas is one of the principal motive forces which propels or carries the oil through the sands into a well and causes the well to flow or gush. Moreover, gas is one of the important factors governing the accumulation or concentration of the oil into commercially productive fields. It is more mobile than the oil and flows or moves more readily through the voids in the reservoir rocks. Under atmospheric pressure, California oils will absorb upward of 15 per cent of their volume of natural gas. As the pressures increase the amount of gas dissolvable in oil increases. At depths found in the oil fields the gas is frequently under heavy pressure. When this pressure is released by the drilling of a well the gas moves toward the outlet, carrying oil with it. Because of its much greater mobility the gas moves more readily than the oil, and there is a tendency as the pressure is released for some of the gas to become dissociated from the oil and for the oil to lag behind the gas in its movement toward the well. To obtain the maximum work from the gas the pressure must be conserved as much as possible in the reservoir rocks, and the distance which the gas has to carry the oil through the sands to the well should not be too great. Hence for the proper development of an oil field the wells must not be too far apart.

The radius from which oil can be drawn or carried to a well depends largely upon the gas pressure. In the case of gusher wells, this pressure is often 1,000 pounds or more; whereas, with pumping wells it will in all practical cases be much less and will eventually approach zero. Discounting some possible hydrostatic pressure, it is, therefore, evident that to recover all of the available oil from a field in which the gas pressure has been completely relieved it will be necessary to put down something approaching an infinite number of wells. On the other hand, if the gas pressure had not been relieved each well could be counted upon to drain to a considerable degree a fair-sized area. In other words, gas pressure must be used to the greatest possible extent if the maximum production of oil is to be obtained.

With the production of oil there is in most fields a large gas production. In the early development of an oil field there seldom exists an immediate adequate market to take care of all the gas available. To conserve gas by a delayed drilling program until a market is developed would undoubtedly mean a loss of recoverable oil.

Under the most ideal conditions some oil is left in the sands. Estimates of the amounts of oil left underground after the wells have declined to their economic limit have ranged from 25 per cent to as much as 90 per cent—the commonest estimate being about 50 per cent.

In speaking of waste by flowing wells, it is stated that one of the reasons for this is that they are flowed "wide open." This method is not followed in California. The character of the formations will not permit of this, due to the abrasive action of unconsolidated sands being forced into the well with great velocity, which soon cut out the screen or perforated casing and pipe connections, or cause the well to "sand up," thus causing endless difficulties, and the probable utlimate loss of the well. It is, therefore, always necessary to restrict the flow in order to keep a well on production. By flowing a well in a restricted manner the gas is conserved over a longer period of time.

The gas being the principal motive force which propels the oil to the well during the period of flush production, mechanical assistance is rarely needed in recovering the oil. The efficiency of the gas for moving the oil, as previously stated, decreases as the distance from the well increases. This, therefore, makes the time element in the completion of the adequate number of wells to efficiently drain an area one of the essential factors. Because of its nature, gas will move a much greater distance through the sub-surface formation than oil, and will, therefore, escape through a few wells and not carry as much oil out of the ground.

Loss Through Delay

Statements made by Cutler and Clute lend a favorable opinion toward greater recoveries in the Oklahoma fields by more rapid drilling programs:

"Naturally a loss in recovery per acre follows a delayed drilling program owing to the smaller initial production of wells and also in some cases to the effect of drainage. The drainage factor is important to the operator if his property has not been protected properly by line wells. In order to obtain the maximum amount of oil from a district, a fast-drilling program is necessary, thus obtaining wells of relatively large initial production and consequently large ultimate production."

Data showing the effect of drilling on ultimate recovery are given by the above authors in several Oklahoma pools. These data indicate that losses were sustained ranging from 5 per cent in two years to 53 per cent in one year on account of delay in drilling. Statements are made by Swigart and Schwarzenbek to the effect that in the Hewitt Field, Carter County, Oklahoma, an estimated loss was sustained of 53 per cent on account of delay of one and one-half months, and another instance of a loss of 73 per cent due to a delay of four months in drilling. Lewis and Beal are authors of statements to the effect that "one well in course of time may drain out all the gas in the field almost as completely as 100 wells but the amount of oil drained from the field will be far less than if the hundred wells had been drilled." Practical examples of this statement may be noted from an examination of the production records of fields throughout California. Previous to the time that wells were drilled on town lots the more closely drilled fields such as McKittrick, Brea-Olinda, and Kern River, were higher in recovery per acre than most other fields. These closer fields have about one well for every two and one-half acres of developed land, and up to July 1, 1923, according to Calkins and Barnes, the fields showed the following:

McKittrick	77,700 bbls. per acre
Brea-Olinda	99,100 bbls. per acre
Kern River	39,000 bbls. per acre

Effect of Closer Spacing

The new fields are now forging ahead on recoveries per acre on still closer spacing in many portions of each field. Up to July 1, 1923, these new fields have shown recoveries as follows:

Santa Fe Springs	73,700 bbls. per acre
Long Beach	102,500 bbls. per acre
Huntington Beach	35,000 bbls. per acre

A comparison of the foregoing results from closely drilled fields with the production from three other fields, given below, where spacing is much wider, with one well to every 6 or 10 acres, is significant:

Coalinga	25,400 bbls. per acre
Elk Hills	22,700 bbls. per acre
Midway	20,500 bbls. per acre

Lewis and Beal further state that "spacing is not so much a problem of how many acres a well will drain as it is a problem of obtaining the greatest possible production in the minimum time and at a minimum expense."

In a recent press notice, dated October 29, 1923, the Department of the Interior has made statements on this subject following an investigation by the Bureau of Mines engineers as follows:

"Theoretically the closer the spacing the greater the ultimate recovery of oil from oil sand."

"Speed in getting a well into the pay sand is a prime requisite, because the first well in any locality benefits by obtaining the flush production. It often happens that a well will produce more oil during the first 10 days or two weeks than can afterwards be pumped in a year or more."

"Although oil can be recovered more rapidly and in larger amounts with a greater number of wells if they are drilled before the gas pressure is reduced, too rapid exhaustion of oil and gas may cause the approach of edge water."

"The Bureau of Mines has shown that delay in drilling shows a loss in recoverable oil because of reduced gas pressure. It has also been pointed out that widely spaced wells have a larger ultimate production, but the production per acre per tract as a whole, in most cases, is smaller than when wells are closely spaced. It is, therefore, just as important not to overspace wells as it is not to space them too closely. Overspacing decreases the amount of recoverable oil—underspacing usually causes financial loss."

"Although the Government is anxious to have the maximum amount of oil recovered, it realizes that an economic balance must be struck whereby the cost of recovery is not excessive with respect to the value of oil recovered."

From the above statements, it will be noted that various authorities are in agreement that to obtain a maximum yield the recoverable oil should be recured as quickly as possible and by relatively close spacing of wells.

INTENSIVE DRILLING CONDUCIVE TO MAXIMUM RECOVERY OF OIL

The great overproduction of crude oil in this country during the last year has led to expression of a belief that a great natural resource was being wasted. This view has not been confined to the layman, for there are those in the oil industry itself who are of the same thought. The thought expressed is that the remarkably intensive development of certain oil fields—sometimes termed "town-lot drilling"—has resulted in a waste of oil. A careful study, however, says the Bulletin of the Standard Oil Co. of California, makes it seem very doubtful that the alarm expressed by some observers is justified. As a matter of fact, eminent authorities who have studied this problem are of a contrary opinion.

In southern California, during the last two years, three new fields have been developed by very rapid drilling campaigns, and a vast number of wells have produced great quantities of oil. These developments have attracted much attention and led to a great deal of discussion. It has been said that more wells were drilled than necessary to the recovery of a maximum amount of oil, and that in consequence of this intensive method of drilling, as against a more orderly program, with wells set widely apart instead of so closely together, there has been a great waste of oil and gas —a waste of an irreplaceable "natural heritage." The development has also been called an "economic crime."

The oil industry's one problem and obligation in the development of an oil field is to take from the earth the greatest possible amount of petroleum, to be sent to market or placed in proper storage for future use. Whether intensive drilling, with numerous wells close together, or a drilling campaign with fewer wells widely spaced, is the more effective method of recovering the maximum quantity of oil, is a question which is discussed in the accompanying article by petroleum engineers of the Standard Oil Co. of California.

The facts at hand indicate that the intensive drilling has led to a greater recovery of oil than would have been the case if the wells had been widely spaced. Perhaps wells in some instances were too closely spaced, and, hence, a needless amount of money was spent, resulting in an economic waste; but so far as the oil itself is concerned, there has probably been no waste. On the contrary, it appears more oil was recovered through this method of exploitation than is possible with wide spacing of the wells and a slow drilling program.

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REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

CHICAGO DIST. (Based on Group 3)—	Jan. 8		Jan. 1		Dec. 25	
50-52 450 end point (Naphtha)	.08¼	.08¾	.08	.08¼	.06¾	.07
56-58 450 end point	.08½	.08¾	.08¼	.08¾	.06¾	.07
58-60 437 end point (New Navy)	.09¼	.09¾	.09	.09½	.07½	.07¾
60-62 400 end point	.10½	.10¾	.09¾	.10	.08¼	.08¾
64-66 375 end point	.11¼	.11½	.11	.11½	.09¼	.09½
68-70 360 end point	.11⅝	.12	.11½	.12	.10	.10⅜
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.08½	.08¾	.08¼	.08¾	.07	.07¼
56-58 450 end point	.09	.09½	.08½	.08¾	.07¼	.07½
58-60 437 end point (New Navy)	.09½	.09¾	.09	.09½	.07½	.07¾
60-62 400 end point	.10¼	.10¾	.09¾	.10¼	.08½	.08¾
64-66 375 end point	.11¼	.11½	.10¾	.11¼	.09	.09½
68-70 350-365 end point	.12	.12¼	.11¼	.11¾	.10	.10¼
KANSAS—						
58-60 437 end point (New Navy)	.09¾	.10	.09¼	.09¾	.07¾	.08
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.08¼	.08½	.08	.08¼	.06¾	.07
50-52 440 end point (Naphtha)	.08½	.08¾	.08¼	.08½	.06¾	.07¼
56-58 450 end point	.08¾	.09	.08¼	.08¾	.07	.07¼
58-60 437 end point (New Navy)	.09¼	.09½	.09	.09¼	.07½	.07¾
60-62 400 end point	.10¼	.10½	.09¾	.10	.08¼	.08¾
64-66 390 end point	.11	.11½	.10¼	.10¾	.09	.09¼
64-66 375 end point	.11¼	.11¾	.10½	.11	.09¼	.09½
NORTH LOUISIANA—						
56-58 450 end point	.08¾	.09	.08¼	.08½	.06¼	.06¾
58-60 437 end point (New Navy)	.09	.09½	.08¾	.09	.07	.07½
60-62 400 end point	.11	.11¼	.09½	.09¾	.08	.08¼
64-66 375 end point	.12¼	.12½	.12	.12¼		
64-66 390 end point	.11¾	.12	.11	.11½	.08¾	.09
ARKANSAS—						
58-60 450 end point	.09½	.09¾	.09	.09½	.07½	.07¾
58-60 437 end point (New Navy)	.09¾	.10	.09½	.10	.07¾	.08
64-66 375 end point	.11¼	.11½	.11	.11½	.09½	.09¾
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (New Navy)	.11½		.11		.10½	
PENNSYLVANIA—						
52 Naphtha	.09		.09		.08¾	
54 Naphtha	.09½		.09½		.09	
56 Gasoline	.10		.10		.09¼	
58 Gasoline	.11¼		.10¼		.09½	
60 Gasoline	.11¼		.10½		.10	
62 Gasoline	.12		.12		.11	
64 Gasoline	.13		.13		.13	
66 Gasoline	.15¼		.15¼		.15¼	
68-70 Gasoline	.16¼		.16		.16	

*Colorado points.

NATURAL GASOLINE

CHICAGO DIST. (Based on Group 3)—	Jan. 8		Jan. 1		Dec. 25	
Grade A, 72-78, under 375 e.p., rec. 90%	.08½	.08¾	.07½	.08	.06	.06½
Grade B, 76-82, 375 end point, rec. 85%	.08	.08½	.07¼	.07¾	.05¼	.05¾
Grade C, 80-88, 350 end point, rec. 78%	.06¾	.07¼	.05½	.06	.04¾	
OKLAHOMA (Group 3)—						
Grade A, 72-78, under 375 e.p., rec. 90%	.08½	.09	.08	.08½	.06	.06¼
Grade B, 76-82, 375 end point, rec. 85%	.08	.08½	.07¼	.07¾	.05½	.06
Grade C, 80-88, 350 end point, rec. 78%	.07	.07½	.06	.06½	.05	.05¼
Grade D, 88-92, 350 end point	.07	.07½	.06	.06½	.05	.05¼
NORTH TEXAS—						
Grade A, 72-78, under 375 e.p., rec. 90%	.08½	.08¾	.08	.08½	.05¾	.06
Grade B, 76-82, 375 end point, rec. 85%	.08	.08½	.07¾	.08	.05½	.05¾
Grade C, 80-88, 350 end point, rec. 78%	.06¾	.07	.05¾	.06¼	.05	.05¼
NORTH LOUISIANA—						
Grade B	.07¾	.08¼	.07¼	.07½	.05¾	.06
Grade C	.07	.07¼	.05¾	.06¼	.05	.05¼

MOTOR NATURAL GASOLINE (BLEND)

CHICAGO DIST. (Based on Group 3)—	Jan. 8		Jan. 1		Dec. 25	
58-62 437 end point	.08¾	.09	.07¾	.08¼	.06½	.06¾
60-62 450 end point	.08¾	.09	.07¾	.08¼	.06½	.06¾
64-66 450 end point	.08¾	.09	.07¾	.08¼	.06½	.06¾
OKLAHOMA (Group 3)—						
60-62 450 end point	.08¾	.09	.08	.08½	.06½	.06¾
64-66 437 end point	.08¾	.09	.08	.08½	.06¾	.07
68-70 430 435 end point	.08¾	.09	.08	.08½	.06¾	.07
NORTH TEXAS—						
58-62 440 end point	.08½	.09	.07¾	.08¼	.06½	.06¾
58-60 450 end point	.08½	.09	.07¾	.08¼	.06½	.06¾
PENNSYLVANIA—						
*60-62	.10½		.09¾		.09½	
*64-66	.10½		.09¾		.09½	
*66-68	.10½		.09¾		.09½	
*68-70	.10½		.09¾		.09½	

*At Sistersville, W. Va.

BURNING OIL

CHICAGO DIST. (Based on Group 3)—	Jan. 8		Jan. 1		Dec. 25	
42-43 water white Kerosene	.04½	.04¾	.04⅜	.04¾	.04⅜	.04⅝
42-44 water white Kerosene	.04⅜	.05	.04⅝	.04¾	.04½	.04¾
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04¾	.05	.04½	.04¾	.04½	.04¾
42-43 water white Kerosene	.05	.05¼	.04¾	.05	.04⅝	.04¾
41-43 prime white Kerosene	.04½	.04⅝	.04¼	.04⅝	.04¼	.04⅜
KANSAS—						
41-43 water white Kerosene	.05¼	.05½	.05	.05¼	.04¾	.05
NORTH TEXAS—						
41-43 water white Kerosene	.04¾	.05	.04½	.04¾	.04¼	.04½
41-43 prime white Kerosene	.04½	.04¾	.04¼	.04½	.04	.04¼
40-42 prime white Kerosene	.04¼	.04½	.04	.04¼	.04	.04¼
42-44 water white Kerosene	.05	.05¼	.04¾	.05	.04¾	.04⅝
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05	.05¼	.04¾	.05	.04¾	.05
42-43 water white Kerosene	.05¼	.05½	.05	.05¼	.05	.05⅛
ARKANSAS—						
41-43 water white Kerosene	.05¼	.05½	.05	.05¼	.04¾	.05
42-44 water white Kerosene	.05½	.05¾	.05¼	.05½	.05	.05⅛
ROCKY MOUNTAIN STATES—						
*40-42 prime white Kerosene	.08		.07¾		.07½	
PENNSYLVANIA—						
43 Kerosene prime white	.07		.07		.06¾	
45 Kerosene water white	.07½		.07½		.07	
46 Kerosene water white	.08		.08		.07¾	
47 Kerosene water white	.08½		.08½		.08¼	
36 Miners' Neutral	.07¾		.07¾		.07¼	

*Colorado points.

FUEL OILS

CHICAGO DIST. (Based on Group 3)—	Jan. 8		Jan. 1		Dec. 25	
24-26 Fuel Oil (sellers' cars, Group 3)	.90	.95	.85	.90	.77½	.82½
22-24 (El Dorado)	.80	.85	.72½	.77½	.70	.75
18-20 (Smackover)	.70	.75	.67½	.72½	.60	.65
32-36 Gas Oil	.02½	.02¾	.02½	.02¾	.02½	.02⅝
38-40 Straw distillate	.03¼	.03½	.03¼	.03½	.03⅛	.03⅜
KANSAS—						
24-26 Fuel Oil	1.05	1.10	.95	1.05	.95	1.00
32-36 Gas Oil	.03	.03¼	.02¾	.03	.02½	.02⅝
38-40 Distillate	.03¾	.04¼	.03¾	.04¼	.03½	.03⅝
OKLAHOMA (Group 3)—						
24-26 Fuel Oil (buyers' cars)	.95	1.00	.85	.90	.80	.85
24-26 Fuel Oil (sellers' cars)	.95	1.05	.90	.95	.85	.90
28-30 Fuel Oil (sellers' cars)	1.05	1.10	.95	1.00	.90	.95
32-36 Gas Oil	.02¾	.02⅞	.02½	.02⅝	.02½	.02⅝
38-40 Straw Distillate	.03½	.03⅝	.03¼	.03½	.03	.03⅛
NORTH TEXAS—						
24-26 Fuel Oil	.90	.95	.80	.85	.75	.80
26-30 Fuel Oil	.95	1.00	.85	.90	.80	.85
32-36 Gas Oil	.02⅝	.02¾	.02½	.02⅝	.02⅜	.02½
36-38 Gas Oil	.02¾	.03	.02⅝	.02¾	.02⅝	.02⅝
38-40 Straw Distillate	.03½	.03¾	.03¼	.03½	.03	.03⅛
NORTH LOUISIANA—						
20-22 Fuel Oil	.85	.90	.75	.80	.70	.75
32-36 Gas Oil	.02¾	.03	.02½	.02¾	.02½	.02⅝
38-40 light Straw Distillate	.03¼	.03½	.03	.03¼	.03	.03⅛
ARKANSAS—						
38-40 Distillate	.03¼	.03½	.03	.03¼	.03	.03⅛
32-36 Gas Oil	.02¾	.03	.02⅝	.02¾	.02½	.02⅝
22-26 Refinery Fuel Oil	.90	.95	.80	.85	.75	.80
GULF COAST (South Texas)—						
Gas Oil	.04	.04½	.03½	.04	.03½	.04
Fuel Oil	1.15	1.20	1.15	1.20	1.15	1.20
PENNSYLVANIA—						
30-34 Fuel Oil	.05		.05		.04¾	
36-40 Fuel Oil	.05¼		.05¼		.05	
34 Neutral	.08¼		.08¼		.07½	

NEUTRAL OILS

OKLAHOMA (Group 3)—	Jan. 8		Jan. 1		Dec. 25	
Pale Neutrals:						
70-80 vis., 2½ color, 20-25 cold test	.04	.04¼	.04	.04¼	.04	.04¼
100 vis., 2 color, 20-25 cold test	.05	.05½	.05	.05½	.05	.05⅝
100 vis., 3 color, 20-25 cold test	.04¾	.05	.04¾	.05	.04¾	.05
150 vis., 3 color, 20-25 cold test	.09½	.10	.09½	.10	.09½	.10
150 vis., 4 color, 20-25 cold test	.09	.09½	.09	.09½	.09	.09⅝
180 vis., 4 color, 23-28 cold test	.11¼	.11¾	.11¼	.11¾	.11¼	.11¾
180 vis., 3 color, 23-28 cold test	.12	.12½	.12	.12½	.12	.12⅝
200 vis., 3 color, 23-28 cold test	.13	.13½	.13	.13½	.13	.13⅝
200 vis., 4 color, 23-28 cold test	.12¼	.12¾	.21¼	.12¾	.12¼	.12⅝
200 vis., 3 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14⅝
220 vis., 4 color, 25-30 cold test	.13¼	.13¾	.13¼	.13¾	.13¼	.13⅝
240 vis., 3 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15⅝
240 vis., 4 color, 25-30 cold test	.14¼	.14¾	.14¼	.14¾	.14¼	.14⅝
280 vis., 3 color, 25-30 cold test	.17½	.18	.17½	.18	.17½	.18
280 vis., 4 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
300 vis., 3 color, 25-30 cold test	.18	.18½	.18	.18½	.18	.18⅝
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.10½	.11	.10½	.11	.10½	.11
180 vis., 6 color, 23-28 cold test	.09¾	.10¼	.09¾	.10¼	.09¾	.10⅜
200 vis., 5 color, 23-28 cold test	.11½	.12	.11½	.12	.11½	.12
200 vis., 6 color, 23-28 cold test	.10¾	.11¼	.10¾	.11¼	.10¾	.11⅜
220 vis., 5 color, 25-30 cold test	.12½	.13	.12½	.13	.12½	.13
220 vis., 6 color, 25-30 cold test	.11¾	.12¼	.11¾	.12¼	.11¾	.12⅜
240 vis., 5 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
240 vis., 6 color, 25-30 cold test	.12¾	.13¼	.12¾	.13¼	.12¾	.13⅜
280 vis., 5 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
280 vis., 6 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
150-160 vis., 1 color, 40-50 cold test	.06	.06½	.05	.05½	.04½	.05
190-200 dark green, 40-50 cold test	.04¾	.05½	.04	.04½	.03½	.04
600 steam refined	.16		.16		.16	
590-600 right Stock	.23	.26	.23	.26	.23	.25
600-610 Bright Stock	.26	.28	.28	.31	.28	.31
Waxes:						
124-126 White Crude Scale Wax	.03⅛	.03⅝	.03	.03¼	.03	.03⅛

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

PENNSYLVANIA—	Jan. 8	Jan. 1	Dec. 25
150, 3 color	.24½	.23½	.22½
180, 3 color	.27	.26½	.25½
200, 3 color	.29	.29	.27¼
220, 3 color	.31½	.31½	.30
600, steam refined	.16	.14¼	.13¼
635, steam refined	.18	.16	.15½
650, steam refined	.19¼	.18½	.16½
600, Pennsylvania flash	.21½	.20½	.18½
630, Pennsylvania flash	.25	.25	.23½
*550, E filtered	.18	.17	.16
*600, E filtered	.20	.19	.18
600, E filtered	.19	.18	.16½
600, D filtered	.25	.25	.23½
550, E filtered	.16½	.16	.15¼
550, D filtered	.22	.20	.18½
Pennsylvania Bright Stock	.34	.33	.31¾
†122-124 White Crude Scale Wax	.04	.03⅝	.03⅜
*122-124 White Crude Scale Wax	.04⅛	.03¾	.03½
300 Mineral Seal	.07½	.07½	.07½

*At Warren, Penn. †At New York City.

GULF COAST (South Texas)—	Jan. 8		Jan. 1		Dec. 25	
Lubricating Stocks:						
Zero Black	.07½	.08	.07½	.08	.06½	.07
No. 2 color, 100 vis., pale oil	.09½	.11	.09½	.11	.09	.10
No. 2 color, 150 vis., pale oil	.11	.12	.10½	.11	.10½	.11
No. 3 color, 200 vis., pale oil	.13	.13½	.12½	.13	.11½	.12½
No. 3½ color, 300 vis., pale oil	.15	.16	.15	.16	.14	.15
No. 3½ color, 500 vis., pale oil	.16½	.17½	.16½	.17½	.15½	.16½
No. 3½ color, 750 vis., pale oil	.22	.23½	.22	.23½	.21	.23
No. 1½ color, 150 vis., filtered	.21	.22	.21	.22	.21	.22
No. 2 color, 200 vis., pale filtered	.23	.25	.23	.25	.23	.25
No. 2½ color, 300 vis., pale, filtered	.28	.29	.28	.29	.28	.29
No. 3½ color, 500 vis., pale, filtered	.32	.33	.32	.33	.32	.33
No. 3½ color, 750 vis., filtered	.38	.40	.38	.40	.38	.40
No. 5 to 6 color, 200 vis., red oil	.11	.12	.11	.12	.10	.11
No. 5 to 6 color, 300 vis., red oil	.12½	.13½	.12½	.13	.11½	.12½
No. 5 to 6 color, 500 vis., red oil	.14½	.15½	.14½	.15	.13½	.14½
No. 5 to 6 color, 750 vis., red oil	.21½	.23	.21½	.22	.20	.21

NEW YORK DOMESTIC MARKET

	Jan. 8	Jan. 1	Dec. 25
Motor Gasoline:			
Greater New York, in steel barrels	.15½	.15½	.15½
New York State (outside Greater New York and New England, tank wagon	.15½	.15½	.15½
New Jersey, tank wagon	.15½	.15½	.15½
Gasoline in bulk, delivered at N. Y.	.10	.10	.09½
V. M. P. Naphtha, in steel barrels	.14½	.14½	.14½
Kerosene:			
Greater New York, tank wagon	.15	.15	.15
New York State (outside Greater New York and New England, tank wagon	.15	.15	.15
New Jersey tank wagon	.14	.14	.14
Lubricating Oil (Industrial) at refinery:			
Bayonne, N. J.:			
Cylinder, extra light filtered, in barrels	.37½	.37½	.37½
Cylinder, light filtered, in barrels	.32½	.32½	.32½
Cylinder, Bright Stock	.44	.44	.44
Cylinder, steam refined (600)	.22½	.22½	.22½
Black, in bulk	.09½	.09½	.09½
Bloomless, white, 30-31 gravity, 170 vis.	.43	.43	.43
Bloomless, 885 specific gravity	.10½	.10½	.10½
Red Paraffin:			
170 viscosity	.18	.18	.18½
212 viscosity	.20	.20	.20
265 viscosity	.22	.22	.22
295 viscosity	.25	.25	.25
Paraffin, 903 specific gravity	.22½	.22½	.22½
*Fuel Oil:			
Bunker Oil, 14 plus, delivered in barges, bbl.	1.35	1.35	1.35
Diesel Oil, at refinery, gallon	.03½	.03½	.03½
Furnace Oil, tank wagon, gallon	.10	.10	.10
Gas Oil, delivered in New York	.04	.04	.04
Wax, fully refined:			
120-122 a.m.p.	.04	.04	.04
125-127 a.m.p.	.04¼	.04¼	.04¼
130-132 a.m.p.	.04¾	.04¾	.04¾
135-137 a.m.p.	.05⅜	.05⅜	.05⅜

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

	Jan. 8	Jan. 1	Dec. 25
Motor Gasoline, in cases, gallon	.25.4	.24.4	.24.4
Motor Gasoline, U. S. Navy, spec. gallon	.11.5	.10.5	.10.5
Naphtha, 60° F., 59-61 spec. grav	.13.0	.12.0	.12.0
Naphtha, 60° F., 63-66, spec. grav	.15.0	.14.0	.14.0
Naphtha, 60° F., 66-68 spec. grav	.16.5	.15.5	.15.5
Kerosene:			
Standard white, in bulk, gallon	.07	.07	.07
Standard white, in barrels, gallon	.14	.14	.14
Standard white, in cases, gallon	.17.15	.17.15	.17.15
Water white, in cases, gallon	.08	.08	.08
Water white, in barrels, gallon	.15	.15	.15
Water white, in cases, gallon	.18.5	.18.5	.18.5

CRUDE OIL PRICES

December 29.—Standard Oil Co. of Louisiana made a general advance of 15 cents in North Louisiana and Arkansas crudes, meeting The Texas Co. prices announced December 27, in the same fields. The Atlantic Oil Producing Co. advanced Stephens, Ark., crude 15 cents.

December 31.—Seep Purchasing Agency advanced all grades of Pennsylvania crudes 15 cents.

January 2.—Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 10 cents. Imperial Oil, Ltd., advanced Canadian crudes 10 cents.

January 7.—Joseph Seep Purchasing Agency advanced Pennsylvania oil in New York Transit and Bradford oil in National Transit lines 15 cents. Corning crude advanced 15 cents.

January 9.—Prairie Oil and Gas Co. adopted the scale of four schedules made effective by The Texas Co. in Oklahoma, Kansas and North Texas December 27, and advanced The Texas Co. prices established at that time, 10 cents. Change met by all major purchasing companies with the exception of the Humble Oil and Refining Co. and the Magnolia Petroleum Co. The latter company met the Prairie prices on all grades above 33° gravity and advanced its quotation on 31° to 32.9, 10 cents. The Humble Co. up to this writing had not announced any change in its crude prices.

Arkansas and North Louisiana	
Caddo, 38° and above	$1.25
35° to 37.9°	1.15
32° to 34.9°	1.05
Below 32°	.90
Homer, 35° and above	1.25
33° to 34.9°	1.15
31° to 32.9°	1.05
Below 31°	.90
Haynesville, 33° and above	1.15
Below 33°	1.05
El Dorado, 33° and above	1.25
Below 33°	1.15
Bull Bayou, 38° and above	1.20
35° to 37.9°	1.05
32° to 34.9°	.90
De Soto	1.25
Crichton	1.05
Bellevue	.90
Smackover, 26° and above	.90
25° to 25.9°	.75
24° to 24.9°	.65
Below 24°	.55
*Stephens, Ark., 28° and above	.95
*26° to 27.9°	.90

*Posted by Atlantic Oil Prod. Co.

Wyoming and Montana	
Rock Creek (Wyo.)	$ .60
Salt Creek	.60
Big Muddy	.45
Mule Creek	.45
Grass Creek	.95
Elk Basin	.95
Lnace Creek	.90
Osage	.90
Cat Creek (Mont.)	.90
Sunburst (Mont.)	.70
Greybull and Torchlight	.95
Hamilton Dome	52½

Lander and Lost Soldier based on contracts covering entire production of fields.

Oklahoma, Kansas, North and Central Texas	
Corsicana Light	$1.25
Corsicana Heavy	.50
Mexia	1.25
Currie	1.25
Currie (Humble Oil & Ref. Co.)	1.35
Powell	1.25
Thrall	1.00
Prairie Oil & Gas Co., and other major purchasing companies except as noted below:	
Below 33°	$1.00
33° to 35.9°	1.25
36° to 38.9°	1.40
39° and above	1.50
Magnolia Petroleum Co.:	
Below 28°	.50
28° to 30.9°	.75
31° to 32.9°	1.00
33° and above, same as Prairie.	
Humble Oil & Refining Co.:	
Below 30°	.90
30° to 32.9°	1.00
33° to 35.9°	1.15
36° to 38.9°	1.30
39° and above	1.40

Gulf Coast	
Gulf Pipe Line Co., Goose Creek, Hull, Sour Lake, Batson, Saratoga, Spindletop, Orange, Vinton, Edgerly, Jennings	$1.25
Grade "B," Pierce Junction, Blue Ridge	.90
The Sun Pipe Line Co., Grade "A," Humble, Hull, Goose Creek, Orange, Spindletop, Saratoga, Batson, Dayton, Sour Lake	1.25
Grades "B," Blue Ridge, Pierce Junction	1.00
Humble Pipe Line Co., Goose Creek, Hull, West Columbia, Orange	1.25
Grade "B," Pierce Junction	1.00
Texas Pipe Line Co., Humble, West Columbia, Orange, Sour Lake, Saratoga, Batson, Vinton, Jennings Markham	1.25
Sinclair Pipe Line Co., West Columbia, Damon Mound	1.25

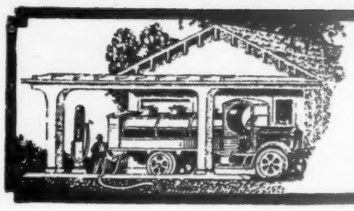
California	
14° to 19.9°	$ .60
20° to 20.9°	.61
21° to 21.9°	.62
22° to 22.9°	.63
23° to 23.9°	.64
24° to 24.9°	.65
25° to 25.9°	.66
26° to 26.9°	.67
27° to 27.9°	.68
28° to 28.9°	.69
29° to 29.9°	.70
30° to 30.9°	.71
31° to 31.9°	.72
32° to 32.9°	.73
33° to 33.9°	.74
34° to 34.9°	.75
35° gravity and above	.76

Eastern States	
Penna Grade Oil in New York Transit Lines	3.40
Bradford District Oil in National Transit Lines	3.40
Penna Grade Oil in National Transit Lines	3.00
Penna Grade Oil in Southwest Pa. Pipe Lines	3.00
Penna Grade Oil in Eureka Pipe Lines	3.00
Penna Grade Oil in Buckeye Pipe Lines	3.00
Corning Grade Oil in Buckeye Pipe Line Lines	1.55
Cabell Grade Oil in Eureka Pipe Line Lines	1.45
*Somerset Medium Oil in Cumberland Pipe Line Lines	1.40
*Somerset Light Oil in Cumberland Pipe Line Lines	1.55
Ragland Grade Oil in Cumberland Pipe Line Lines	.85
Lima	1.63
Wooster	1.50
Illinois	1.42
Indiana	1.43
Princeton	1.42
Plymouth	.80
Waterloo	.90
†Petrolia, Canada	2.03
†Oil Springs, Canada	2.10
Western Kentucky (light), (Indian Ref. Co.)	1.46
Western Kentucky (heavy), (Indian Ref. Co.)	1.26
Warren & Simpson Counties (Ky.) (Paragon Development Co.)	1.46
Cumberland and Monroe Counties (Ky.), (Paragon Dev. Co.)	1.61

*Somerset oil commands 6 cents over the above posted price.
†Plus Government bounty of 52½c.

Mexican Crude	
*Tuxpam (f.o.b. Mexican ports)	$ .80
†Panuco (f.o.b. Mexican ports)	.65
Tuxpam (New York)	1.31
Panuco (New York)	1.06

*Plus 26.69c tax. †Plus 15.58c tax. Prices based on contracts.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, Jan. 8

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Chicago district	14.0	..	16.0	10.0

Tank wagon prices on April 10, 1922, g. up 1½c; May 8, g. up 1c; June 27, both up 1c; July 19, g. down 2c; k. down 1c; Oct. 10, g. down 2c; Oct. 31, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 29, g. up 2c.

Decatur, Ill.	14.2	..	16.2	10.5
East St. Louis	13.1	..	15.35	9.6
Joliet	14.4	..	16.4	10.7
Peoria	14.2	..	16.2	10.5
Quincy	14.2	..	16.2	10.3
Davenport, Ia.	14.5	..	16.5	10.9
Des Moines	14.5	..	16.5	10.9
Keokuk	14.5	..	16.5	10.9
Sioux City	14.1	..	16.1	10.5
Duluth, Minn.	15.2	..	17.2	11.6
Minneapolis	14.9	..	16.9	11.6
La Crosse, Wis.	15.2	..	17.2	11.4
Milwaukee	14.1	..	16.1	10.2
Madison	14.3	..	16.3	10.5
Detroit, Mich.	14.8	..	16.8	11.2
Grand Rapids	14.7	..	16.7	11.1
Saginaw	14.9	..	16.9	11.3
Evansville, Ind.	16.0	2.0	18.0	10.5
Fort Wayne	16.4	2.0	18.4	10.9
Indianapolis	16.2	2.0	18.2	10.7
South Bend	16.4	2.0	18.4	10.9
Fargo, N. D.	16.6	1.0	18.6	13.6
Huron, S. D.	16.0	2.0	18.0	12.1
Sioux Falls	15.5	2.0	17.5	11.6
*Kansas City	14.9	1.0	16.9	9.3
Springfield	13.8	..	15.8	10.2
*St. Louis	13.6	.5	16.9	10.0
*St. Joseph	14.3	.5	16.3	10.2
Wichita, Kans.	13.8	..	15.8	9.8

*City tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
*Pittsburgh, Pa.	14.0	..	19.0	14.0
*Philadelphia	14.0	..	19.0	14.0
*Scranton	14.0	..	19.0	14.0
*Allentown	14.0	..	19.0	14.0
*Altoona	14.0	..	19.0	14.0
Dover, Del.	16.0	2.0	19.0	14.0
Wilmington	16.0	2.0	19.0	14.0
Providence, R. I	15.5	..	18.0	14.0
Springfield, Mass	14.5	..	17.0	14.0
Worcester	14.5	..	17.0	14.0
Boston	14.5	..	17.0	14.0
Hartford, Conn.	16.5	1.0	19.0	14.0
New Haven	16.5	1.0	19.0	14.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Atlanta, Ga.	16.0	3.0	18.0	14.0
Augusta	18.0	3.0	20.0	15.0
Macon	18.0	3.0	20.0	15.5
Savannah	16.0	3.0	18.0	14.0
Birmingham, Ala.	16.0	2.0	18.0	15.5
Mobile	16.0	2.0	17.0	13.5
Montgomery	16.0	2.0	18.0	16.0
Clarksdale, Miss	14.0	1.0	16.0	14.0
Jackson	14.0	1.0	16.0	12.0
Natchez	13.5	1.0	15.5	13.5
Vicksburg	13.5	1.0	15.5	13.5
Jacksonville, Fla	16.0	3.0	18.0	14.0
Miami	18.0	3.0	20.0	15.5
Pensacola	16.0	3.0	18.0	14.5
Tampa	16.0	3.0	18.0	14.0
Covington, Ky.	16.0	1.0	18.0	13.0
Lexington	15.0	1.0	17.0	14.0
Louisville	14.0	1.0	16.0	13.0

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Newark, N. J.	15.5	..	....	14.0
Atlantic City	15.5	..	....	14.0
Annapolis, Md.	17.0	2.0	20.0	14.0
Baltimore	17.0	2.0	20.0	13.0
Cumberland	17.0	2.0	20.0	15.0
Washington, D. C.	15.0	..	18.0	13.5
Norfolk, Va.	18.0	3.0	20.0	13.0
Petersburg	18.0	3.0	20.0	14.5
Danville	18.0	3.0	20.0	15.5
Richmond	18.0	3.0	20.0	13.5
Roanoke	18.0	3.0	20.0	15.0
Keyser, W. Va.	17.0	2.0	....	15.0
Charleston	17.0	2.0	....	13.5
Parkersburg	17.0	2.0	....	12.0
Wheeling	17.0	2.0	....	13.5
Charlotte, N. C.	18.0	3.0	....	14.5
Hickory	18.0	3.0	....	15.0
Mt. Airy	18.0	3.0	....	14.5
Salisbury	18.0	3.0	....	15.0
Charleston, S. C.	18.0	3.0	....	12.5
Columbia, S. C.	18.0	3.0	20.0	14.5

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Denver, Colo.	16.0	2.0	18.0	12.5
Glenwood Spgs.	20.0	2.0	....	16.5
Pueblo	16.0	2.0	18.0	12.5
Basin, Wyo.	17.0	1.0	....	13.0
Casper	15.0	1.0	17.0	11.0
Cheyenne	16.5	1.0	18.5	13.0
Cody	18.0	1.0	....	14.0
Lander	17.0	1.0	....	13.0
Billings, Mont.	19.5	2.0	21.5	14.5
Butte	21.0	2.0	23.0	15.0
Great Falls	21.0	2.0	23.0	16.0
Helena	21.0	2.0	23.0	16.0
Miles City	20.5	2.0	22.5	15.5
Boise, Idaho	20.0	2.0	22.0	18.0
Salt Lake, Utah	19.0	2.5	21.0	15.5
Ogden	19.0	2.5	21.0	15.5
Albuquerque, N. M.	19.0	1.0	21.0	15.5

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Dallas, Tex.	12.0	1.0	15.0	9.0
Fort Worth	12.0	1.0	15.0	10.0
Houston	14.0	1.0	18.0	11.0
San Antonio	12.0	1.0	15.0	9.0
El Paso	12.0	1.0	13.0	12.0
Muskogee, Okla.	13.0	1.0	16.0	11.0
Oklahoma City.	13.0	1.0	16.0	11.0
Tulsa	13.0	1.0	16.0	10.0
Ft. Smith, Ark.	15.0	4.0	18.0	12.0
Little Rock	17.0	4.0	20.0	13.0
Texarkana	17.0	4.0	20.0	12.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Albany, N. Y.	15.5	..	18.5	14.0
*New York	15.5	..	18.0	15.0
Buffalo	14.0	..	17.0	15.0
Rochester	15.0	..	17.0	13.0
Syracuse	15.0	..	17.0	15.0
Boston, Mass.	14.5	..	17.0	15.0
Providence, R. I	15.5	..	19.0	15.0
Augusta, Me.	15.5	1.0	19.0	15.0
Manchester	15.5	1.0	19.0	15.0
Burlington, Vt.	15.5	1.0	19.0	15.0

*Price in steel barrels.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
New Orleans, La	11.5	1.0	14.5	9.0
Alexandria	12.5	1.0	15.5	13.0
Baton Rouge	11.0	1.0	14.0	11.5
Lake Charles	12.5	1.0	15.5	13.0
Shreveport	12.5	1.0	15.5	13.0
Memphis, Tenn.	14.0	2.0	17.0	14.0
Chattanooga	14.5	2.0	17.5	14.5
Knoxville	15.5	2.0	18.5	15.0
Nashville	13.5	2.0	15.5	13.5
Bristol	16.0	2.0	19.0	15.5
Little Rock, Ark	16.0	4.0	19.0	13.0
West Helena	16.0	4.0	19.0	13.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Omaha	14.25	..	16.25	10.5
Crawford	15.0	..	.....	11.25
McCook	15.75	..	17.75	12.0
Norfolk	14.75	..	16.75	11.0
North Platte	15.75	..	17.75	11.75
Scotts Bluff	15.25	..	17.25	11.25

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
San Francisco	13.0	2.0	16.0	15.5
Los Angeles	12.0	2.0	15.0	15.5
Fresno	13.5	2.0	16.5	17.5
Reno, Nev.	16.5	2.0	19.5	19.0
Portland, Ore.	15.0	3.0	18.0	16.5
Seattle, Wash.	14.0	2.0	11.0	16.5
Tacoma	14.0	2.0	17.0	16.5
Spokane	18.0	2.0	21.0	20.5
Phoenix, Ariz.	19.0	3.0	22.0	21.5
Honolulu, H.	12.5	..	15.5	17.5
Juneau, Alaska	13.5	..	16.5	18.0

OHIO

Standard Oil Co. (Ohio)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
All Ohio points	16.0	..	18.0	13.0

TANK WAGON CHANGES

In the general gasoline change made effective in the Standard of Indiana tank wagon territory December 29, the advance at Sioux City, Ia. and Milwaukee, Wis., was 2.1 cents instead of 2 cents and at Sioux Falls and Huron, S. D. no change was made. These changes are exceptions to the general 2-cent advance effective in the Standard of Indiana territory effective on that date.

Effective December 31, the Continental Oil Co. advanced gasoline and tank wagon service station price 1 cent in entire territory with the exception of Denver, Colo., where the advance was 2 cents and Albuquerque, N. M. and Boise, Idaho, where no change was made.

CHAPIN VISITS TULSA

Newton Chapin, president of the Lee C. Moore Co. of Pittsburgh, Pa., arrived in Tulsa the fore part of the week. He is visiting old friends in the Mid-Continent area while making his headquarters at the Tulsa offices of the Lee C. Moore Co.

Texas Court Ruling To Protect Leases During Litigations

AUSTIN, Texas, Jan. 7.—Deciding a new and important question of interest to oil operators, the third court of civil appeals has affirmed the case of United North and South Oil Co. against Meredith and others, from Caldwell County. The court holds that a receiver can be appointed to take over and develop an oil lease as well as sell the real estate.

Litigation started over the lease rights on 156 acres of land in the Luling Field. There were conflicting leases, allegations of forfeiture having occurred. Besides the original plaintiffs and defendants there were intervenors and arguments made that while the courts were taking time to decide the lease rights, the wells on the abutting land would drain the oil from under the strip in controversy and deprive royalty holders and lease holders of valuable property. Chief Justice McClendon sustains this contention.

Judge McClendon cites the decision of the supreme court holding oil and lease rights constitute property under the laws of Texas. He next discusses cases which called for the appointment of receivers to protect property rights, and adds:

"Here the property involved is the mineral rights in land in a proven field which already is in a high state of development and production. The title to the minerals already has been severed from that of the fee by the acts of the parties to the litigation, by lease contracts, into which the law imports the obligation of the lessees to drill offset wells. No question is raised as to the imperative necessity of such offset wells as the only protection to the property.

"The property can be saved only by development, the cost of which is too great to warrant its undertaking, with the hazard which the litigation creates unremoved. If development is delayed until the litigation is terminated, the property interests of all concerned will be lost or greatly diminished. To deny a receivership under such circumstances would be to deny the only remedy which would afford any degree of protection to the parties for their loss."

The order of the trial court provided a receiver with full powers to drill wells, develop the land, provide storage, sell the oil and do all things necessary to conduct of the oil business, holding the receipts for the custody of the court. Expense of development is to be borne out of the payments for lease rights.

When writing to advertisers please mention The Oil and Gas Journal.

MID-CONTINENT REFINERY OPERATIONS DECEMBER 29

With three additional refineries reporting, the weekly report of the Western Petroleum Refiners Association for the week ending December 29 shows a large increase in gasoline, kerosene, fuel and gas oil stocks. The increase in gasoline stocks for the week totaled 7,451,441 gallons, kerosene 2,220,682 gallons and fuel and gas oils 14,689,058 gallons. Reports from identical refineries covering the past two weeks indicate about the same consumption of oil by the refiners, decreases in gasoline and gas and fuel oil output and an increase in the output of kerosene. Although stocks of all products for the entire Mid-Continent area showed an increase, there were slight decreases in gasoline stocks in Kansas, North Louisiana and Arkansas.

CONSOLIDATED STATEMENT COVERING ALL REPORTING REFINERIES FOR WEEK ENDING 7 A. M., DECEMBER 29, 1922

	Kansas	Oklahoma	Texas	La. & Ark.	Total	Week End. Dec. 22	Week End. Nov. 24	Week End. Nov. 17
Number of refineries reporting	24	55	40	12	134	131	126	125
Daily capacity of still, bbls.	82,900	260,700	130,950	46,200	520,750	497,850	486,650	481,750
Material for stills, bbls.:								
Crude oil, item A	256,296	749,031	585,819	116,227	1,707,373	1,677,437	1,700,615	1,687,222
Other oils (see note), item B	16,968	100,072	158,191	19,414	294,645	276,147	492,296	480,770
Total	273,264	849,103	744,010	135,641	2,002,018	1,953,584	2,192,911	2,167,992
Output of finished products, gals.:								
Gasoline, item C	3,724,886	12,337,782	6,918,517	1,117,261	24,098,446	24,363,941	22,788,402	20,632,750
Kerosene, item D	1,439,829	4,165,749	2,373,651	334,472	8,313,701	7,614,924	8,106,275	6,833,150
Gas and fuel oil, item E	5,298,653	13,287,608	15,428,893	2,971,658	36,986,812	37,640,121	32,902,786	32,296,197
Stocks on hand at close of week:								
Materials for stills, bbls.:								
Crude oil, item J	588,029	4,357,305	1,006,350	1,169,792	7,121,476	7,033,473	6,736,606	7,003,710
Other oils (see note), item K	22,596	915,268	364,642	563,998	1,866,604	1,688,370	1,730,163	1,708,400
Finished products, gals.:								
Gasoline, item C	5,113,186	63,326,498	37,674,908	5,676,967	111,791,559	104,340,118	101,062,231	104,296,000
Kerosene, item M	1,662,307	10,698,117	7,943,225	351,060	20,654,709	18,434,027	19,467,656	13,016,450
Gas and fuel oil, item N	6,563,917	46,900,400	43,282,439	10,040,687	106,787,443	92,098,386	105,961,116	106,658,400

Note: Other oils includes all oils other than crude which are either purchased or withdrawn from stocks and run to stills during the week. The total of items A and B is, therefore, the net quantity of materials consumed by the reporting refineries in producing the quantities of products shown as the result of the operation of the refineries during the week. Item K includes all stocks of oils, other than crude, held for further refining.

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Petroleum Technologists Debate Rotary

L. R. McCollum Tells British Meeting of American Experience and His Hosts Question Him On Problems Presented

The modern rotary drilling system was the subject of discussion before a recent meeting of the British Institute of Petroleum Technologists in the Royal Society of Arts rooms, London, opened by a paper read by L. R. McCollum from which the following extracts are taken through the courtesy of the London Oil & Color Trade Journal.

Since Colonel Drake, of first oil well fame, brought in this discovery well at Titusville, Pa., in 1859, Mr. McCollum said, the percussion, or cable tool method of drilling which Colonel Drake used, has changed but little in principle. Exploitation work in the Gulf Coast regions of Texas and Louisiana, however, encountered unconsolidated soft and caving formations, which gave the cable tools a bad time. To combat these conditions the rotary system was invented or rather developed upon the Fauck system, which had been in use in Europe since 1845. By this method a rigid stem of pipe rotates a fishtail—or other type of bit—at the bottom of the hole, being assisted by the action of clay mud in the fluid state, pumped under hydraulic pressure, through the drill pipe. The circulating mud also removes the cuttings from the hole.

This improved method had its inception in the Spindletop Field of Texas, and in the course of some 18 or 20 years has drilled approximately 25,000 wells. Modifications and improvements were soon added which enabled it to penetrate thick strata of extremely hard rock at great depths. It is not unusual in a rotary field for a good crew to average 450 feet of hole per day. Wells have been drilled to a depth of 5,000 feet with only two strings of casing. The rotating action of the bit and drill stem causes the mud to be thrown against the walls of the hole, plastering them thoroughly and penetrating porus formations to a very small extent, where it "muds off" water and gas.

Objections Raised

One of the objections which is raised against the rotary system is that there is the danger of also mudding off unknown oil sands. There may be this danger in "wildcat" or improved territory, especially in the hands of an unskilled or inexperienced workman, and to obviate it there has been evolved what is known as the combination rig. In this system, the derrick and machinery are provided for both types of drilling, and if conditions are met which, for any reason, cause the findings of the rotary to be questionable, then the cable tools may be brought into play. The combination system is employed to a large extent in known fields where the rotary is generally used to drill through the upper formations at great speed, effecting a tremendous saving in time, trouble and expense, and the cable tools are used finally to drill into the oil sand.

Government regulations in Rumania, Poland and some other countries still insist that the old strata be penetrated with dry percussion tools only, because of the fear that oil levels may be flooded by the rotary mud fluid. It has, however, been so conclusively demonstrated that the danger is a theoretical rather than a practical one, that many Government Mines Bureaus are revising this regulation, and in California it has been abolished altogether. If accurate logs of wells in a new locality are kept, and if, as is very desirable, core barrels are run and cores taken with the rotary equipment, it is easily possible to calculate the underground formations of the field, and if desired, do away with the cable tool feature of the combination, using straight rotary only.

DEVELOPMENT OF THE ROTARY

The rotary method of drilling is attracting increasing attention in many countries. The discussion of the system before the Institute of Petroleum Technologists at London, opened by an American, was marked by searching inquiry on the part of the British members, their queries being answered in detail by Mr. McCollum.

During the debate many interesting points were brought out on the origin of the rotary, its employment in different fields and the criticisms offered. The practice in South America was especially informing. Much of the discussion centered around the effect of mud fluid.

In the rotary system the drilling tools consist of a flat bit in the form of a fishtail mounted on the bottom of a string of drill pipe extending to the surface, where it is grasped and rotated by the table of the rotary machine mounted on the derrick floor. The whole string of drill pipe is suspended from the tackle fitted with a swivel attachment, so that the bit may be raised and lowered and its pressure on the bottom regulated. While drilling is proceeding mud-laden fluid is pumped through a flexible hose to the connection of the swivel, down through the hollow drill stem and out through holes in the bit. Here it mixes with the cuttings and carries them up between the drill pipe and the walls of the hole to the surface. The mud-laden fluid plays a very important part in rotary drilling, and it is important that it should contain only very finely divided clay. It usually has the consistency of thick cream and a specific gravity of 1.4. The hydrostatic pressure of the column of mud enables high pressure gas strata to be penetrated with no danger of a blow-out. On its upward passage outside the drill pipe a proportion of the mud adheres to the walls of the hole, and plasters them to such an extent that any tendency to caving is overcome.

The advantages claimed for this system are: (1) High gas, water or oil pressures can be easily and successfully controlled. (2) A more accurate log can be obtained by liberal use of the core barrel. (3) The oil-bearing formations are not subject to continuous penetrations by water or mud. (4) Less time is required to complete the well. (5) Less casing is required. (6) Wells are invariably completed at a lower cost.

Experience Abroad

The rotary has been introduced during the last few years into many oil fields outside the United States, particularly in Burham, India, Persia, Russia, Rumania, Poland, Mexico and Central and South America, said Mr. McCollum, in conclusion. In practically every case, particularly in Russia, Rumania and Poland, the decision to use the rotary has been forced on the operating companies by the failure of, or excessive cost or the time consumed by the drilling methods hitherto used. In Poland, where hard formations are encountered, and it is necessary to reach depths of about 5,000 feet, the Galician or Canadian pole tool system of drilling has proved itself very inefficient, requiring in some cases as much as 10 years to reach the required depths.

An average time for drilling a 5,000-foot well may be placed at not less than five years. In Persia the rotary system is rapidly displacing the Canadian rig, and successfully penetrating very hard formations of gypsum and limestone. One of the rotary wells in Persia has reached a depth of 4,220 feet, although the rotary system has only recently been introduced there. In Rumania rotary wells are finished in from 60 to 90 days, in comparison with the Canadian system's average of 18 months, and the cable tool's average of nine months.

In many fields where the rotary has been introduced in opposition to the existing methods it has been, Mr. McCollum said, the object of the prejudices of local drillers and engineers, with the result that tests made with the rotary system have often been unsatisfactory. It is essential that the rotary should be operated by competent and experienced drillers. The importance of employing experienced and practical rotary drillers has been demonstrated recently in Rumania. Rumanian drillers operating six rotary machines were making an average of 100 meters of hole per month. In June this year, six highly experienced men were imported and were placed on three rotary machines operating in the same district, with the result the Anglo-Saxon labor averaged 400 meters per month per machine, during the months of August, September and October. So great was the saving they effected in time, overhead, etc., that the comparatively high wages they received became a matter of no significance. Over half the meterage now drilled in Rumania at present is done by the rotary system, whereas in 1913 there was only one rotary operating in the country. It is gratifying to notice that rotary drillers have now in their ranks many highly-trained young graduate engineers. This will undoubtedly in the course of time increase even to a greater degree the efficiency and results obtained by the rotary system of drilling.

Early Day Troubles

C. Darbell said that his first experience of the rotary system was some 20 years ago in the Caucasus, but the system was not of this particular type. It was on a core producing plant. The cores could be produced then of 12-inch diameter down to 800 or 900 feet, and with a 10-inch core the depth could be as considerable as 1,800 feet. They did not find it necessary to use a double-core barrel at all; just a single-core barrel sufficed. The bit was of the circular type with the kind of edge which Mr. McCullom had described. The teeth were set one in and one out, leaving an annulus between the core and the barrel, in some cases, he would think, about ¼-inch or a little more; it depended on the formation. To grip the core they would break up any old plates, china, or bits of flint into the size of a large pea, pump this gently down the rods, and it would then settle around the core. The process was that commonly known as grouting. In that way one got a torsion on the tools, and with a sharp snap with the levers one broke the core and pulled it up. That was his first experience with the rotary.

He was afraid he had not had much experience with the particular type of core to which the author had refer... The first that came into Rumania ... the core produced by Batt & Southwor... The master drillers and himself as ... "rough neck" went up the country ... drilled down to 1,800 or 1,900 feet. T... the tools got jammed. The rotary ... was that of Parker. He remembe... how one of the drillers, after lugging ... snapping and jerking at everything ... could, went off into the woods and ... him (the speaker) to have a try. ... put his hand to the lever and felt ... derrick running off a little slack. Af... some other signs of trouble, he dis... it wisest to get behind the boiler, ... the whole derrick came down. That ... his very last experience with the rot... system. He was quite prepared to b... lieve that this jamming of the tools ... not now take place, owing to the ... that better tools were in use. One qu... tion he would like to ask was whet... the mud ever adhered to the inside of t... drill stem, thus decreasing the orifice.

South American Practice

C. M. Hunter said that, having ... some rather peculiar experiences in Sou... America in working rotaries, he thoug... that some of those present might like ... have the benefit of his results. His ... perience had been in Argentina, wh... the thickness of the sand in the oil fi... varied considerably; sometimes from 2 ... 3 feet to a maximum possible of 10 fe... When the rotary was first introduced ... the Argentine Government the resu... were hopeless, the system stood co... demned, and fell into disrepute.

Some little time afterwards he was ... much impressed with the possibility ... introducing rotary drillers. Hitherto ... had taken over 12 months to drill a we... (2,000 feet), and the first well put dow... by this new method took only about eig... weeks. The introduction of the rotary, ... however, aroused a certain amount ... antagonism among local engineers, an... eventually more serious trouble aro... from the fact that the formations ... which the work was done were very thi... and, with the best intentions in th... world, it was more than probable that ... the drillers passed some of these ver... thin stems, thus causing the muddy fl... to pass from one well to another. He ... had rather anticipated that trouble. ... There were very high gas pressures, an... althogether the conditions were such th... to switch off from the rotary to ... standard tubes just meant failure. The ... difficulty arose entirely from the inabili... to detect the moment that the drillers ... got into these thin oil sands. This diffi... culty had been eventually overcome by ... going back to a prototype of the rotary, ... namely, the Fauck system, which has ... been in use in Europe since the middle of ... the last century.

Argentine System

The Fauck drilling system was used al... most entirely by the Argentine Govern... ment in their wells. His own opinion ... was that it was very slow indeed. When ... they got down to the depth at which the ... anticipated trouble, they took out the ... rotary and substituted the hollow rod ... of the Fauck system somewhat modified. ... By using a reverse action, pumping down ... the mud outside the rods and getting a ... return through the mud, one got perfect ... sampling taking place. It did not take ... long to make the calculations. Within ... a very few minutes one got to know ex... actly what the formation was, from the ... little pellets of sand or clay, or whatever ... the substance might be.

Since then that system has been im... proved and elaborated in Argentina, so ... that in certain areas, wherever they get ... to these lenticular sands, which

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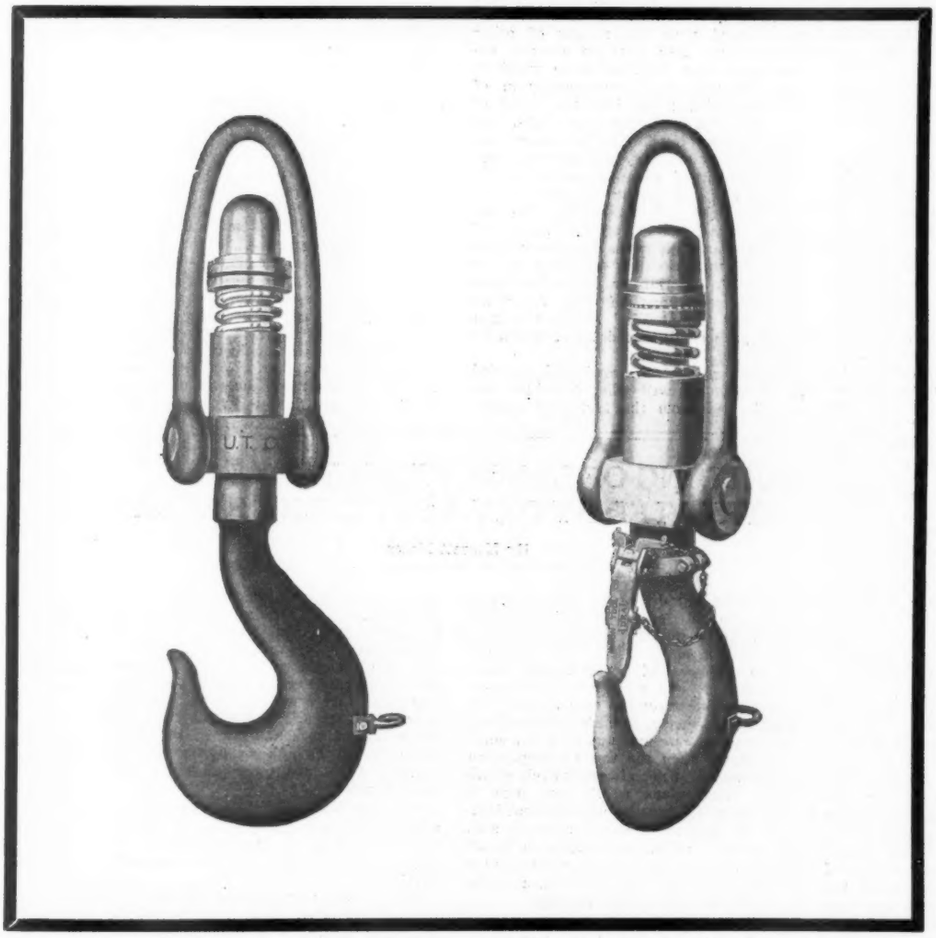

Shock absorbing feature effects savings in drilling cost.

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the ordinary rotary one would pass through without knowing about them, the precise character of the formation was revealed. This introduced another factor. Could not the rotary be improved to get over the difficulty he had mentioned? A very simple type of core barrel was evolved, and instead of having a crown bit, they had something like an ordinary mud pump, as used in the old hand-drilling days, and that scraped up the material inside; they did not eject the water at all. This arrangement was quick to use in sand formation, although of course, quite unsuited to hard formations, and it gave very good results.

Another thing which they found satisfactory was, when drilling with the rotary, to stop the drill every half meter and keep the pumps going for a sufficient time to ensure that all the sediment came out. The mud was run over a number of casing collars, and in that way a good sample formation was obtained. He could furnish the Institution with the results of some of the sampling. In a distance of 338 feet, for instance, they got 92 samples of absolutely different formations. That would sufficiently explain how very tricky these formations were. By running the collar rods with reverse rejection the thinnest formation passed in that way was apparently one of 6-inch thickness. These formations were worked by continuous running of the rods.

There was one point arising out of all this which, he thought, should be borne in mind. In his opinion, the trouble which arose with wells getting out of control came about through the driller not knowing exactly where he was. He believed that he was 20 feet away from the formation, and went on drilling, but before he knew it he had upset the static conditions at the bottom of the well and had got into his oil sand before he knew he was there. The whole object of drilling the well was to prevent the change from the static into the dynamic condition. The moment the static condition was altered and the dynamic condition was let loose, one had trouble. They were working towards that end in the Argentina, and he believed that it was the right method to pursue, and that by so doing the driller would never get into his sand before he was aware of it, and the flow would take place into the hollow rods at a controllable rate. The whole purport of his remarks was to emphasize the fact that sampling was a most important point, and it was the failure to appreciate this which was more responsible even than the human equation for bringing the rotary into disrepute.

Geologist's Views

Mr. Dewhurst said that the paper did not seem to offer much scope for discussion from the geological point of view, but one or two points might be mentioned. Geologists were formerly opposed to the oratory system owing to the difficulty of obtaining satisfactory records of the strata drilled through, and to the possibility of oil sands being passed through undetected. The introduction of the core barrel had revolutionized the rotary in these respects, and had converted it into the best drilling system from the standpoint of the petroleum geologist. The coring of oil sands was a new feature in the drilling of exploratory wells, and geologists were eager to learn what inferences could safely be drawn regarding the value of oil sands from the examination of cores.

Thickness and porosity were obviously important features of oil sands, and these, combined with the nature of the oil show given by cores, might enable safe inferences to be drawn as to the probable value of oil sands. Oil sands which were not commercially valuable would probably yield cores with a fair showing of oil. He understood that cores taken in abandoned oil fields proved that oil was still present in large quantities in exhausted oil sands, which not only confirmed the view generally held by technologists that only a portion of the oil in a sand was recoverable by the usual methods of development, but suggested that oil sands which were not commercially valuable might yield cores with a fair showing of oil. He understood that in the United States the interpretation of core evidence was subject to a wide range of opinion, and he trusted that Mr. McCollum would throw more light on the significance of the oil indications given by cores.

Effect of Mud Fluid

The effect of mud fluid on porous strata seemed to require further discussion. The point which was not quite so clear to him as to rotary enthusiasts was that, irrespective of the length and weight of the mud column and of the pressure in the various gas, oil and water sands encountered, the forces in a rotary well were supposed to be always so delicately balanced that worthless sands were effectively muddied off, while valuable sands were never in danger of being adversely affected by the mud fluid. He was much interested in the experiment described by Mr. McCollum, in which mud fluid was subjected to a pressure of 400 pounds, and yet formed only a thin film on the rock surface with which it had been in contact. This result agreed with the results of other experiments. For example certain experiments were described from which it was concluded that the penetration of the mud-laden fluids into the pores of the wall of a well was very slight, and that it was impossible to pump and back into an ordinary porous formation, the addition of pump pressure merely adding a small amount to the filtered deposit on the wall of the hole. The suggestion that there was no danger of penetration of oil sands by rotary mud-fluid was unfortunately not borne out by experience. Kirwan, in discussing abandonment operations of the American Petroleum Co. at Well No. 8, Coalinga Field, gave significant data, of which he quoted the following:

"Evidence that the mud-fluid traveled away from the well when the fluid was thin is had from the fact that muddy water on the fifth day appeared in succession in the production of wells 7, 6 and 5, being more pronounced in the nearest one. No. 7, distant 332 feet; and least in No. 5, distant 1,000 feet."

Examples Cited

Again Nolan cited an abandonment job in the East Side Coalinga Field, where over 40 tons of mud water under a pressure of less than 200 pounds, were pumped into a 30-foot sand and three days afterwards appeared in a well 300 feet away. Again, circulation was sometimes lost during rotary drilling, and appreciable quantities of mud obviously disappeared. Surely when this happened the mud formed more than a film on the wall of the hole? In case it should be contended that the mud fluid was probably thin in all the examples referred to he gave a case which recently came to his notice.

Of two wells, situated 134 feet apart, one was producing oil and the other was being drilled by the rotary system. The mud fluid used in drilling this well was as thick as the pumps could handle, being 14 pounds to the gallons. The mud circulation became unsatisfactory for 24 hours, and was then entirely lost, the top of the mud fluid column being 150 feet from the surface. The owner of the first well then reported that his well had been completely muddied up and that only mud was being pumped.

Therefore, although experiments showed that mud fluid would merely form a thin filtered film close to the surface of a porous formation, the examples he had mentioned showed that mud fluid, and even very thick mud fluid, could and did travel probably along joint planes in sandstones, and possibly along induced drainage channels in sands, for considerable distances, and even from well to well. In such circumstances he thought that Mr. McCollum should offer evidence for his statement that it had been conclusively demonstrated that the danger of oil levels being flooded by rotary mud was a theoretical rather than a practical one.

One further point; he knew of several rotary drilled wells which had given excellent showings of oil while drilling through known protective oil sands, but which had failed to give any production from these sands after thorough washing with clean water and subsequent bailing. It seemed possible that in these cases the rotary mud fluid had formed more than a thin superficial film on the surface of the oil sands, and had even formed a thick annulus of mud-clotted sand which could not be removed by subsequent washing with clean water. He hoped Mr. McCollum would enlighten them on these points in his reply. He was in complete agreement with his views on the enormous advantages of modern rotary drilling in regard to speed, economy in casing, and the use of the core barrel.

Origin of System

Professor H. T. Madgwick said he had only one little criticism to make, and that was with regard to what he considered an error at the beginning of the paper when the author attributed the rotary system to Fauck. The original system, which was a water-flush system, was usually known as the Fovell system, although the actual inventor was an Englishman named Edait, and Fovell was an engineer. The principle of the Fovell system was a rotary and cusp system, and from those two varieties of action they had, on the one hand, the Fauck, and, on the other hand, the present rotary. He thought that the rotary could be very well traced to the Fovell system. The Fovell was used in France, but in the chalk there it was not a very great success; moreover, the mechanical means of drilling with it were not available at that time.

Then, in 1855, he believed it was adopted in Denmark for drilling water through alluvial and glacial soil, and from there it was transferred to the States, where it had a very extended use. In the "Engineer," for 1855, a very interesting article would be found describing what was the predecessor of the present rotary. Thus, the rotary system was not at first an oil well system at all; it was a water system purely, even down to the mud flush, and the oil people, therefore, ought not to take too much credit for the development which had ensued; credit should be given to the mechanical engineering which overcame the enormous difficulties which must have confronted the early workers with this system.

Mr. McCollum's Reply

Mr. McCollum, in answer to Mr. Dabell's question regarding the adhesion of mud on the inside of the drill pipe, said this had never been perceptible. In fact, the hole through the drill collars was 2½ inches in diameter, there were two joints on the drill collars, and even in these small orifices there was practically no accumulation of mud-fluid to be seen. It did not come up against the static pressure so much as it did on the outside where there was a kind of plastering action like that of a plasterer operating on the walls of a house.

With regard to other matters connected with the core barrel, he recalled that in 1909 he went up to Texas to see a newly-discovered well in the Markham Field. Those were days before the introduction of the Hughes bit and the roller bit, and they cored over 800 feet of solid lime. The core barrel was made very much of the order of Mr. Dabell's core barrel, with saw-teeth and was staggered, and it was dropped adamantine or chilled into the hole and the action of the tempered teeth noted. He recalled seeing an 800-foot continuous core in four or five feet sections lying all along the wall. That was the type of core barrel then in use in Texas. The oil sands were entered with a core barrel in each instance, but the core barrel was home made.

With regard to the remarks on the

(Continued on Page 92)

BUILDING OF LARGE FIELD TANKS TREATED BY OXY-ACETYLENE EXPERT

By Everett Moses

Read Before the Tulsa Purchasing Agents' Association

It is recognized that the most effective, if not the only means of prolonging the life of the oil industry lies in the prevention of waste, of which the principal causes are fire and heavy annual losses from leakage and evaporation. However correct or incorrect the estimates of loss from these sources, it must be considered that it is unnecessary, and that this enormous drain upon the world's supply can be minimized, if not almost entirely eliminated. Any plans which may tend to this result deserve the utmost consideration and will no doubt be received with the keenest interest and attention by an industry which has already manifested a willingness to be convinced and a desire to apply any successful remedy.

The writer of this paper has for a number of years entertained the firm belief that welded tanks would prove to be the best, if not the only solution of this problem. It not only prevents losses from leakage and evaporation but minimizes the fire hazard as well.

That this conviction has lately been shared by a vast majority of the petroleum industry is quite apparent. The recent development of floating tank tops (which are essentially welded products), the extension of welding to roofs and bottoms of large field storage tanks, the building of several enormous welded gasholders in Australia, and the increasingly insistent demand of the whole petroleum industry for permanently gas tight joints in all tanks designed for the storage of volatile liquids affords abundant proof of the present day tendency toward complete welded construction in tanks of all sizes and descriptions.

Behind this movement lies the best and soundest reasoning. It is a proven fact that a welded joint, when properly executed, is just as strong and durable as the parent metal; that such a joint, being unaffected by expansion and contraction, will not open up under the influence of the elements nor the heat of conflagration; that once a welded joint is executed it is gas tight and remains gas tight. In the minds of reasonable men, therefore, there cannot be and surely is not the slightest doubt about the mission of the welded tank.

The only question which does arise is whether the welding process is capable of building large field storage tanks. To this point, therefore, this paper addresses itself.

Of the relative merits of the different welding processes, little is known of an authentic nature. It is perhaps too early to say which of the two (gas or electric) is the better. Time alone must resolve that question, and for the present purpose it is sufficient to say that both are good. With that, the mutuality of our interests ends. The welding industry is divided into its own particular branches, just as the petroleum industry, and while laying no brief against any other process, we of the oxy-acetylene branch believe in the ultimate triumph of gas welding as applied to tank construction, especially where the quality weld is the object to be attained. We, therefore, stand firmly upon the conviction that in working out this paramount problem of the petroleum industry, the oxy-acetylene process gives promise to become the most important, if not the wholly indispensable factor.

Examples in Field

Within the past few years, several storage tanks have been erected in the field solely by oxy-acetylene welding. One

(Continued on Page 90)

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Argentine Oil Search Is Handicapped

Buenos Aires Report of Conditions in the Fields, Operations of Companies and the Obstacles Encountered

"A spirit of uneasiness characterizes the statements made public during the last two months by the officers of all private-owned oil companies operating in Argentina," according to an article in the American Weekly of Buenos Aires. "Typical of this spirit is the announcement made by Sir John Cadman, special representative of the Anglo-Persion Oil Co., that he had decided to dismiss the entire administrative and technical staffs in his company's employ and that plans of the Anglo-Persian for the immediate future as regard Argentina are uncertain. This action of Sir John Cadman, one of the world's greatest authorities on petroleum, who recently came to Argentina on a special mission, may be considered as most significant, since the Anglo-Persian during the past year spent approximately 1,000,000 pounds in prospecting and drilling in various regions of Patagonia. Sir John sums up the oil situation of the entire country as 'terribly speculative.'

"While no such radical step on the part of any other large oil combines operating in Argentina has as yet been taken, nevertheless, it is evident that practically all of these are dissatisfied with results. The reasons for this dissatisfaction are two: First, the companies feel that in comparison with efforts and money spent results have been exceedingly small and that further expenditure is highly speculative; second, the unsatisfactory treatment which private oil capital is receiving at the hands of the Government. In effect, many companies, after having incurred heavy expense in exploration work and fulfilling the requirements laid down in the Argentine mining code for securing concessions, have been flatly refused concessions by the minister of agriculture on the grounds that a complete revision of the mining code was being undertaken and no concessions would be granted until the new legislation had been sanctioned.

Injustice Protested

"The companies claim that this attitude is not in keeping with justice and that the granting of concessions once the requirements have been fulfilled in accordance with the existing code is a mere administrative act on the part of the minister. Finally, the promised bill has been presented to the house of deputies, but the oil companies maintain that if this bill is sanctioned private capital interested in oil development will be placed in a very unsatisfactory position and the oil industry in Argentina will be set back for a generation.

"The companies are in perfect accord with the Government in that a thoroughgoing revision of the existing mining code is urgently needed, for it must be remembered that the present code was written long before oil was found in the country, and therefore, is most inadequate. Since the finding of the first oil well in 1907 in Comodoro Rivadavia as a result of the search for water, a few desultory laws and decrees relative to petroleum have been written on the statute books, but nothing fundamental has been undertaken. In 1910 the Government by decree set aside a reserve of approximately 12,500 acres in the Comodoro Rivadavia district for five years and in 1915 this decree was declared in vigor for five years more. However, the time of the decree ran out on September 16, 1920, and since that time the Government has had no legal reserve in the Rivadavia fields, where it is now operating. In May, 1913, the original reserve of 12,500 acres was somewhat extended, but said extension was only applicable to Government-owned lands and, as a consequence, numerous concessions were granted to private parties in the immediate vicinity of the Government holdings. The present bill provides for the extension of this reserve to about 2,500,000 acres and stipulates that all persons granted concessions be obliged to begin exploitations on these within a period of 30 days.

Would Stop Speculators

"This clause is intended to put a stop to the practice of speculators, who secured concessions for no other purpose than to sell them. The minister of agriculture, in advocating the sanction of this legislation, stated that a case is on record where one party without any financial responsibility had secured concessions in his own name, as well as those of friends, covering approximately 2,500,000 acres.

"In his address before the house, the minister also urged the prompt dispatch of the bill authorizing the executive to spend up to 20,000,000 pesos on a refinery to be erected in Comodoro Rivadavia. He stated in the course of his speech that the capital of the administration of the Government oil fields now amounts to 60,000,000 pesos, of which the federal Government had only contributed the sum of 5,000,000 pesos, the remainder having been derived from profits of exploitation.

"Against setting aside the reserve of 2,500,000 acres for Government exploitations, private oil companies advance the argument that if during the 14 years the Government has been drilling in Comodoro Rivadavia it has covered only barely 750 of its 12,500 acres reserve, what hopes can be entertained of its ever doing justice to 2,500,000 acres. The companies claim, moreover, that the oil business can not be economically handled by the Government for, owing to political influence, the officials in charge of the works constantly are changing and for this reason an uninterrupted policy can not be carried out. Likewise, they hold that oil production and refining is an industry such that only those men who dedicate their lives to it can hope to make a success. In addition, the companies maintain that from the point of view of supplying the country with an abundant supply of cheap domestic fuel, as also with revenue, the encouragement of private capital will, in the end, mean more to the Government itself and to the development of the country as a whole than will the policy of Government exploitation of the republic's petroleum resources.

Number of Wells Drilled

"Up to the present private capital has spent in Argentina approximately 70,000,000 pesos in exploitation work and in drilling the following wells:

"Chayaco Co., 6; Astra Co., 36; Argentine Standard Oil Co., 9; Standard Oil Co. of California, 2; Dodero Syndicate, 1; Argentine Oil Fields, 2; Titan Co., 1; Railways Petroleum Co., 46; Rivadavia Oil Co., 3; Commercial and Industrial Petroleum Co., 19; Diadem Co., 8; Solano Oil Co., 1; Omnium Oil Co., 1; Emilio Kinkelin (Hugo Stinnes), 8, and Eastern Petroleum and Finance Co., 6.

"By way of explanation it is well to mention that the Argentine Standard Oil Co. is a branch of the Standard Oil Co. of New Jersey; the Argentine Oil Fields Co. is financed by British capital and is directing its special efforts toward development of a property at Piaza Huincul (Neuquen Territory), formerly owned by the Cerro Lotena Co.; the Titan Oil Co. is made up of a group of Chilian capitalists; the Railways Petroleum Co. is owned by Southern Western & Pacific Railway companies, who are operating principally in Rivadavia district and have so far invested about 620,000 pounds; Commercial and Industrial Petroleum Co. is an Argentine branch of Anglo-Persian. The Diadem Co. is a subsidiary of the Royal Dutch-Shell; the Eastern Petroleum and Finance Co. is a branch of the British Burmah Oil Co., while the Omnium Co. is entirely financed by French capital. A considerable amount of German and Swiss money is interested in the exploitation of the property of the Astra Co., which also has strong backing of Argentine capitalists and is one of the most prosperous oil concerns in the republic.

"In addition to the companies named above, there are numerous others that are supported by local and foreign capital, which have not yet completed the drilling of a single well. It is a matter to no one that many of the wells sunk by these companies have been abandoned after heavy outlays. These dry holes may be found all the way from the Chilian border at Comodoro Rivadavia to Piaza Huincul and as far south as the mouth of the Santa Cruz River. It has already been said that so far some 70,000,000 pesos of private capital have been invested in Argentine oil properties. However, only two concerns, the Astra and Rivadavia, have obtained oil in commercial quantities. The syndicates financed by foreign capital so far have obtained no returns whatsoever for their outlay and, according to Major Kinkelin, Hugo Stinnes has invested 6,000,000 pesos and has not yet obtained a barrel of oil. Geologists in the service of the strongest oil combines in the world have scoured over the entire republic and, although the capital at the disposal of their principals is unlimited, yet it is clear that very little additional money will be expended n the near future unless the outlook becomes more encouraging.

"As matters stand today, the only proven field in Argentina is that of Comodoro Rivadavia. Geologists believe that oil exists in large quantities in other parts of the republic, but until this belief is borne out by the drill nothing definite will be known. In the event that bill extending the Government reserve in Comodoro Rivadavia to 2,500,000 acres is passed, it is possible that many foreign companies will withdraw from Argentina. This action, through leaving the Government in the exercise of a monopoly of petroleum production, would probably result in a rise in oil prices. Against the sanction of this legislation, however, there is a strong current of public opinion, which is being strengthened by the campaign now being waged by the principal newspapers in favor of a more liberal policy toward private capital.

Revision Desired

"That the revision of the mining code is most desirable is a conviction held not strongly by the private oil companies but by the Government itself. In fact, much dissatisfaction is felt by these companies due to the Government's delay in providing the promised legislation, which must be forthcoming at an early date if it is hoped to avoid a great setback in the development of the country's oil resources. The presentation of this legislation is an arduous task, but one that must be undertaken without delay and worked out from the point of view of real statesmanship.

"Without doubt the Argentine Republic owes much of its progress and development to foreign capital toward which in times past a very liberal policy always has been followed. As regards petroleum, one may well apply the words of President Avellaneda, a far-sighted statesman, whose vision of Argentina's future greatness was based in part on the benefits to be derived from the efforts of private capital and initiative which alone was capable of converting the vast unpeopled stretches of the Pampa into territory of active production. In one of his presidential messages he said: 'Since land of itself has no value, it is necessary to turn it over to capital and labor which alone can give it value.'"

WILDCATS IN NEW MEXICO WILL SPREAD OVER BROAD TERRITORY

By W. F. Kerr

OKLAHOMA CITY, Okla., Jan. 7.—Along an uneven line of structures over 200 miles long are being set derricks that are to test an area of northwestern New Mexico thought to be favorable for oil, according to Harry B. Phillips, Oklahoma City oil operator, who recently returned from that territory after an absence of about three months. This line crosses the Navajo Indian reservation but a majority of tests will be made on United States Government lands east and west of the reservation.

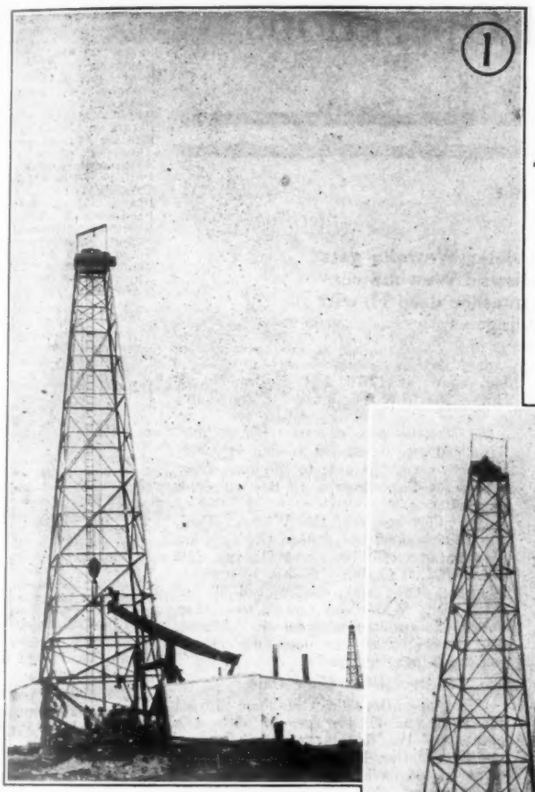
The Arkansas Natural Gas Co. is the latest among large concerns to begin operations in that territory. It has contracted for a test in the Coal Creek area, the location being about 60 miles south of Farmington. In the Coal Creek area contracts have been made also by Melstead & Co., of Los Angeles, Swartz and associates of Long Beach and the Orange Petroleum Co. of Santa Ana, Cal., in which Mr. Phillips has an interest. This line of locations is 60 miles long and all of them are on government lands.

Near the borders of Utah and Arizona and about 135 miles west of its producing area on the Hogback structure of the Navajo reservation, the Midwest Refining Co. is drilling on the Gypsum Creek structure. On the Boundary Butte structure, about 25 miles east of that location, it has another well drilling.

Leases secured by the Arkansas Natural were acquired by Charles F. Noble and J. W. Duncan, of Tulsa, who are reported to have secured 52 government permits to about 2,500 acres each. Several other Oklahoma operators have permits in the territory east of the Navajo reservation and particularly in the Coal Creek section, Mr. Phillips says, and hundreds of thousands of acres of public land are being held.

"The Hogback structure is appropriately named," says Mr. Phillips, "for it is thin and narrow and steep. Dips are abrupt and it is easy to get over the line and into the water section. Many structures on the reservation are similar to this, but there are many that are broad and well defined. Until the ca-

(Continued on Page 96)



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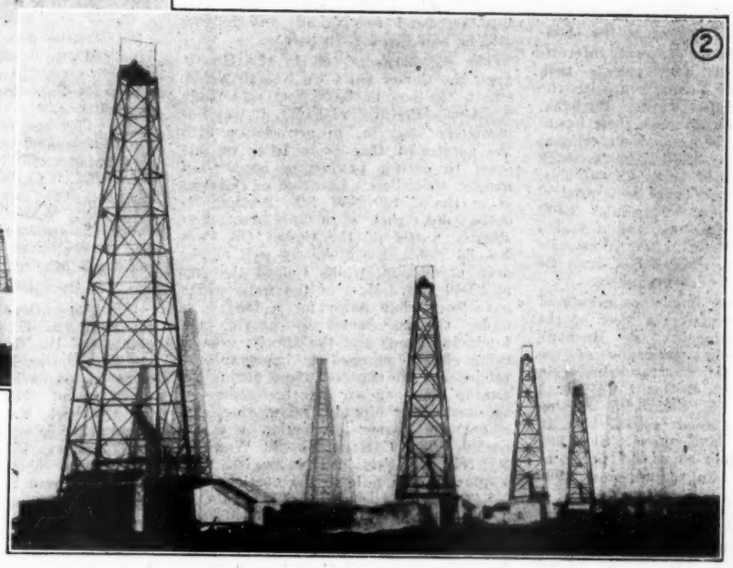

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Oklahoma Field Operations

By C. D. Lockwood

Burbank is center of interest as shutdown committee meets; Wewoka gets another producer good for 1,250 bbls.; Tonkawa, Burbank and Wewoka continue to decline in production; Carter Oil Co. brings in another deep Hewitt gusher; other tests near sand; wildcat gets a good showing.

The cold weather and the usual seasonal slump in activities prevailed during the past week throughout the Oklahoma fields, although several interesting and important developments took place especially in comparison with the events of the past few weeks. Burbank, Tonkawa and Wewoka took their customary tumble in the production column, the former declining 2,775 bbls., the daily average of that field being 69,936 bbls. from 1,113 wells. Tonkawa's production record shows a decrease of 2,103 bbls., reporting a daily average of 42,520 bbls. from 616 wells. And Wewoka's slump amounts to 1,472 bbls. from 23 wells, an increase of 2 producers.

One of the most important events of recent weeks, especially in view of the approaching meeting of the Burbank operators to discuss extension of the shutdown agreement, was the bringing in of the Prairie Oil & Gas Co.'s No. 1 Clubb, in the NE SE NW, Section 9-27-5, which was good for 734 bbls. in 24 hours from sand topped at 2,952 feet. The best pay sand was found at 2,976 feet and total depth was 2,990 feet.

Two offsets to the Prairie Oil & Gas Co.'s No. 1 Clubb have also been drilled in by the Phillips Petroleum Co., No. 7 Clubb, SE cor. NE NW, Section 9-27-5, topping the sand at 2,935 feet, and getting a rainbow show at 2,947 feet. It found a gas sand at 2,968 feet, and at 2,979 feet, flowed 500 bbls. natural the first 24 hours. Phillips' No. 8 Clubb, NW cor. SW NE, in the same section, picked up the top of the sand carrying first oil at 2,934 feet. The first flow came at 2,936 feet and at total depth of 2,968 feet the production was estimated at 1,000 to 1,100 bbls.

Scouts report that the Phillips-Delmar Co. has ordered 13 rigs for use in the SE quarter of Section 10-27-5, and that the Cosden Oil & Gas Co. is to move in 10 rigs for the NW quarter of the same section. One other company is said to have ordered all contractors on wells shut down to be ready to resume drilling soon.

Another producer was brought in by the Sinclair Oil & Gas Co. in the Wewoka Field, the third well that was spudded in in that area when the field was started having found the sand at 3,146 feet, and with the bit 10 feet in it flowed 1,250 bbls. in 24 hours. It is No. 2 Foster, in the NE cor. SW NW, Section 33-8-8, three locations east of the discovery well. The Dixie Oil Co.'s No. 3 Foster, NE cor. Section 32-8-8, which came in some time ago for 50 bbls. from sand at 3,118-30 feet, was at latest reports making about 600 bbls. daily. The Dixie Co. was building a rig for its No. 4 Foster, C SW SW, Section 28-8-8.

W. R. Ramsey's important test, his No. 1 Dindy, NW cor. Section 6-7-8, was finally abandoned as dry at 3,675 feet.

Wildcat Strikes Oil

A rank wildcat about 5 miles northwest of Tonkawa, drilled by the Alcorn Oil Co. picked up a sand that put 2,500 feet of oil in the hole and may open up another pool in that district. It was the company's No. 1 Hubbard, CSL NW, Section 12-26-2w, and topped the sandy lime at 3,630-37 feet, where it had a show of oil. From 3,660 to 3,678 feet, the best sand was found, and it was drilling at 3,678 feet in lime.

The second deep well in the Hewitt area, the Carter Oil Co.'s No. 40 Noble, struck the pay at 3,055 feet and made 2,378 bbls. the first 24 hours. It was immediately shut in, in accordance with the agreement that is in force in this area, to curtail production because of market conditions. Location of this test is in the C SE NW NE, Section 21-4s-2w, one-eighth of a mile west, and slightly north, of the Carter Oil Co.'s No. 33 Noble, the discovery well of the deep production, which topped the pay at 2,940 feet. Most of the wells which have been shut down for a long time under the agreement are nearing the producing sands and the Hewitt area is being closely watched as important developments are expected there during the coming week or so. In fact, some of the tests are already below the level where the gusher production was expected. The Carter's No. 20 Ward, C NE NW NE, Section 21-4s-2w, less than a quarter of a mile to the northwest of No. 33 Noble, is drilling in shale at 3,050 feet, and No. 19 Ward, C SE SW SE, Section 16-4s-2w, is running the 5-inch casing at a total depth of 2,947 feet. The Skelly Oil Co.'s No. 10 Noble, C NW SW NW, Section 21-4s-2w, had the 6-inch casing cemented at 2,967 feet.

A good producer was brought in by the Sure Oil Corp. in its No. 1 Lowery-Walker, C SE SW NE, Section 9-4s-2w, one of the farthest north of the Hewitt producers. Sand was reached at 2,231 feet and penetrated to 2,276 feet, flowing 705 bbls. the first 24 hours with some mud in the hole. The Wolverine Oil Co. completed its No. 30 Dillard, NE cor. SE NW, Section 22-4s-2w, for 190 bbls. initial from sand at 2,527-37 feet. The same company topped a sand at 2,707 feet in its No. 103 Dillard, NW cor. SW, same section, and was still drilling in it at 2,715 feet. The same company's deep test in its No. 71 Dillard, NW cor. NW NE, Section 22-4s-2w, was drilling in black shale at 3,240 feet.

Graham Area Producer

The Graham area had another big producer in Wirt Franklin's No. 2 Gallagher, C SE SW NE, Section 25-2s-3w, which flowed 500 bbls. from sand at 2,450-74 feet with a 3-foot shale break from 2,460-72 feet.

The Besdor Oil & Gas Co.'s wildcat in the SW cor. SE, Section 9-25-2w was carrying a hole full of water at 2,750 feet from what is thought to be the Tonkawa sand.

The Mutual Oil Co.'s No. 1, SW cor. Section 1-22-10, Osage County, was good for 700 bbls. the first 24 hours from the second break topped at 2,253 feet and drilled to 2,260 feet. It made 500 bbls. the second 24 hours.

Pawnee County had a couple of producers, the Tidal Oil Co.'s No. 10, CWL SW NE, Section 24-20-8, was good for 325 bbls. from sand at 2,749-54 feet, and the Southwestern Oil Fields' well in the SE cor. NE SE NW, same section, was making 150 bbls. from sand topped at 2,766 feet and drilled 9½ feet in.

The Gilcrease Oil Co. passed up a 30-bbl. show at 1,670 feet in its No. 1 Simon, NE NW, Section 9-9-9, and found a bigger pay sand at 1,675 feet. At 1,681 feet the well was good for 60 bbls. This will also be passed up and an effort made to carry the hole to the sand from which the Papoose well in Section 4-9-9 is producing.

Six miles north of the Wewoka Pool, the Independent Oil & Gas Co. found a showing of oil in its No. 1 Haning, NE cor. SW, Section 15-9-8, Seminole County. Oil sand was picked up at 3,382 feet. Water was coming from sand above the production level at 3,350-82, and the well was shut down underreaming the 5-inch casing.

Operations Show Gain

Field operations in Oklahoma during the week ended December 29 showed a gain over the figures for the previous week, reporting a total of 1,312 operations in comparison with 1,291 for the week before. The locations lost 4 during the week, but all others reported a gain, as there was 1 more rig, 17 more wells drilling, 4 more wells shut down, and 1 more completion. The figures for the week were as follows: Locations, 52; rigs, 217; wells drilling, 544; wells shut down, 456; completions, 43; total, 1,312.

In Stephens County, Gant and others had 5,000,000 feet of gas in their No. 2-A Marks, CEL NE SE, Section 13-2s-8w, from sand at 1,394-98 feet.

In Cotton County, southeast of Walter, a duster was abandoned by the Amerada Petroleum Corp. in its No. 1 Burrus, NW cor. SW NE, Section 29-4s-10w, at 3,593 feet, steel line measurement.

In Pawnee County, the Magnolia Petroleum Co. was swabbing 100 bbls. from its No. 6 Burgman, NW cor. Section 16-20-6, after a 5-quart shot in sand at 3,370-72 feet. Top of the sand was found at 3,345 feet. The Josey Oil Co. was spudding No. 4 Embry, NE cor. SE SE, Section 21-20-6.

In Southern Creek County, the Prairie Oil & Gas Co.'s No. 1 Bearhead, NW cor. NE, Section 14-14-8, was flowing 75 bbls. from oil sand at 3,190-95 feet. The Midwest & Gulf Oil Corp. abandoned its No. 4 Gooden, NE cor. NW NE, Section 20-15-10, as dry at 3,220 feet.

In Okmulgee County, the Santuna Oil Co. was drilling at 700 feet in its No. 2, NW cor. Section 1-15-11, and the Troy Oil Co. was drilling at 900 feet in its No. 12 Grayson, NE cor. Section 2-15-11. The Pollyanna Oil & Gas Co. had a rig up for its No. 3 Stepney, SW cor. NE NW, Section 12-15-11, an old well. F. D. Misener also had a rig built for his No. 3 Gooden, SW cor. SE SE, Section 32-15-11.

The Savoy Oil Co. shot its No. 2, NW cor. NE, Section 19-15-12, with 80 quarts in sand at 1,654-90 feet and it made 30 bbls. Thompson had a rig in place for his No. 1 Gaither, SE cor. NW SW, Section 28-15-12, and the Allied Refining Co. was spudding No. 1 Murrell, NW cor. SW NW, Section 26-13-11. The Rebold Drilling Co. abandoned the rig on its old well, No. 2 Bruner, CWL NE NE, Section 11-13-12, and will not drill deeper.

For the week ending January 2 the daily average production of the Burbank Field was as follows:

Company—	Wells	Bbls.
Carter Oil Co.	146	7,457
Comar Oil Co.	7	147
Cosden Oil & Gas Co.	68	1,561
Devonian Oil Co.	14	664
Gardner Petroleum Co.	30	664
Gypsy Oil Co.	140	14,931
Kewanee Oil & Gas Co.	13	179
Laurel Oil & Gas Co.	16	460
Lorraine Petroleum Co.	15	330
Midland Oil Co.	6	140
Mid-Kansas Oil & Gas Co.	50	2,764
Peters & Oliphant	1	100
Phillips Petroleum Co. and Delmar Oil Co.	2	2,178
Phillips Petroleum Co.	28	1,614
Phillips Petroleum Co. and Skelly Oil Co.	141	7,183
Prairie Oil & Gas Co.	90	2,329
Producers & Refiners Corp.	28	613
Roxana Petroleum Corp.	97	799
Simons, Moore and others	39	604
Sinclair Oil & Gas Co.	131	6,131
Skelly Oil Co.	4	1,104
Tidal-Osage Oil Co.	41	1,304
Twin State Oil Co.	8	302
Total	1,053	47,871
Kay County—		
George S. Bole	1	741
Carter Oil Co.	3	2,224
Comar Oil Co.	7	2,449
Cosden Oil & Gas Co.	3	2,130
Gypsy Oil Co.	6	2,227
Laurel Oil & Gas Co.	1	37
Phillips Petroleum Co.	9	4,359
Mid-Kansas Oil & Gas Co.	4	2,351
Pure Oil Co.	1	371
Roxana Petroleum Corp.	1	438
Dye, Tomlinson et al	5	500
Skelly Oil Co. and Phillips Petroleum Co.	13	1,304
Sinclair Oil & Gas Co.	1	127
The Texas Co.	1	994
Twin State Oil Co.	5	1,464
Total	60	22,901
Total Burbank	1,113	69,936
Total last week	1,113	72,711
Difference	None	2,775

Pipe line runs from the field during the week were as follows: Gulf Pipe Line Co., 14,092 bbls.; Cosden Pipe Line Co., 6,256 bbls.; Kay County Gas Co., 4,524 bbls.; Osage Pipe Line Co., 2,295 bbls.; Oklahoma Pipe Line Co., 11,022 bbls.; Prairie Pipe Line Co., 5,448 bbls.; Sinclair Pipe Line Co., 902 bbls.; Moore Refining Co., 1,714 bbls.; Empire Pipe Line Co., 872 bbls.; Ozark Pipe Line Co., 2,247 bbls. Total, 49,473 bbls.

The amount run to storage follows: Standish Pipe Line Co., 10,543 bbls.; Mid-Kansas Oil & Gas Co., 3,620 bbls.; Dye, Tomlinson and others, 325 bbls.; Twin State Oil Co., 1,098 bbls.; George S. Bole, 491 bbls.; Sinclair Oil & Gas Co., 3,516 bbls. Total storage, 19,593 bbls.

The daily average production, by companies, in the Tonkawa Field, for the week ended January 2, was as follows:

Company—	Wells	Bbls.
Amerada Petroleum Corp.	35	2,640
Blackwell Oil & Gas Co.	30	1,377
Carter Oil Co.	6	391
Champlin Refining Co.	3	91
Champlin Ref. Co. and Twin State Oil Co.	1	71
Comar Oil Co.	279	17,791
Cosden Oil & Gas Co. and Maryland Refining Co.	14	940
Gypsy Oil Co.	83	6,871
Healdton Oil & Gas Co.	31	3,002
McCaskey & Wentz	43	3,897
McMan Oil Co.	2	31
Pennok Oil Co.	26	1,579
Phillips Petroleum Co.	5	332
Prairie Oil & Gas Co.	13	987
Sinclair Oil & Gas Co.	1	71
Slick-Comar Oil Co.	13	2,847
Southwestern Pet. Co.	14	983
The Texas Co.	4	72
White Eagle Oil & Ref. Co.	7	534
Total	616	43,520
Total last week	615	44,457
Difference	1	2,937

Pipe line runs from the field during the week were as follows: Kay County Gas Co., 20,638 bbls.; Ozark Pipe Line Co., 8,928 bbls.; Gulf Pipe Line Co., 5,738 bbls.; Empire Pipe Line Co., 1,353 bbls.; Champlin Refining Co., 1,369 bbls.; Prairie Pipe Line Co., 907 bbls.; Enid Oil & Pipe Line Co., 265 bbls.; Oklahoma Pipe Line Co., 393 bbls.; Boleen Refining Co., 3,141 bbls.; total, 42,812 bbls.

Amount run to lease storage was 0 bbls.

In Tonkawa Field

In the Tonkawa Field, southwestern Kay County, three old wells belonging to Slick and others were shot for the second time with good increases in production. Their No. 1-A Endicott, SW cor. Section 35-25-1w, which was making 75 bbls. before the shot, was good for 150 bbls. after the firing of 150 quarts in sand at 2,447-81 feet. The first shot in this well was given about the middle of December and raised the production from 66 bbls. to 340 bbls. No. 3-A Endicott, SE cor. SW, same section, was shot with

(Continued on Page 100)

PERFECTION VAPOR PRESSURE TANKS
WOOD, AND BOLTED STEEL TANKS

INDISPUTABLE EVIDENCE NO. 8

RALCO OIL COMPANY

Gridley, Kans.
Aug 7 1923.

To Whom it May Concern:

We are using Black Sivalls & Bryson Vapor Pressure Tanks on our Greenwood Co leases.

Prior to the time of using these tanks we were using Standard Steel Tanks and changed to the more effecient type of tank only because we felt that there was a possibility of the added cost of this more effecient tank being a good investment and money maker for us.

In our standard tanks we lost by evaporation about two and one half barrels a tank at a time when we were running the tank within twelve hours after it was filled. Our vapor pressure tanks in use now save us all of this quantity loss and no doubt a good deal more that was lost while the tank was being filled which of course we would be unable to estimate.

In addition to the saving in quantity which these tanks made us they raised our gravity approximately two points which gave us twenty cents a barrel more for every barrel of oil that we sold. This gravity saving made us $40.00 on each 250 tank sold. On one of our leases alone we were selling 900 barrels of oil a day. These vapor pressure tanks actually made us then $180.00 a day.

In addition to these money making features we heat all of our lease houses in the winter and do all of our cooking in the summertime with gas which is furnished from these tanks.

We believe that these tanks will pay for themselves every month for the twelve months in the year.

We consider these tanks to be a very great asset to our properties and would highly recommend them for use on all oil properties.

Yours very truly,

Ralco Oil Co.

W. M. Long
Supt.

"We believe these tanks will pay for themselves every month."

You will have to admit that any piece of equipment for an oil lease that pays for itself 12 times a year, should be considered a pretty fair investment!

No wonder the Ralco Oil Company would be willing to recommend Perfection Vapor Tanks to other oil producers.

The letter reproduced above is a fitting testimonial to all the claims we have been making—a better advertisement than we could have written ourselves.

Now that Oil Man Gloom is leaving the oil fields of the country, leaving in his wake fresh optimism, start the new year right by taking a swat at evaporation; install Perfection Vapor Pressure Tanks on your lease and watch them pay for themselves.

The Tank That Is An Investment Instead of An Expense

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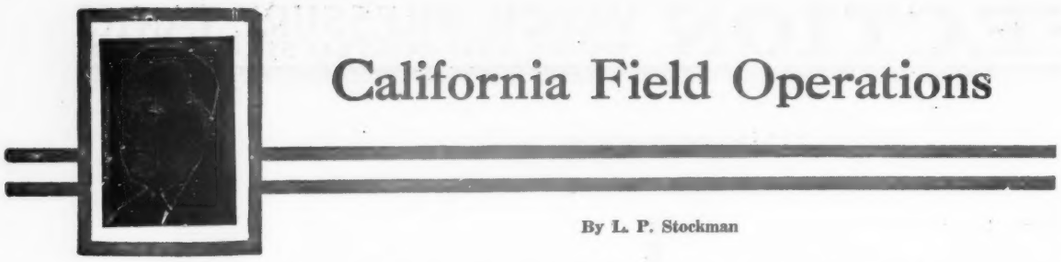

California Field Operations

By L. P. Stockman

Gas pressure drops at Torrance and period of flush production will be comparatively short. Universal Consolidated Oil Co.'s No. 6 Moore rated at 800 bbls. Huntington Signal Co. and Keefe-Risden also have 800-bbl. wells. Pan-American Petroleum Co. brings in 6,845-bbl. producer at Long Beach.

LOS ANGELES, Cal., Jan. 5.—Producers in the Lomita section, Torrance, are showing very rapid declines, those coming in flowing from 1,500 to 2,000 bbls. a day decreasing a short time later to 400 or 500 bbls. and sometimes, even less. It is very noticeable also that the initial production of new wells has declined very substantially. Wells, which a month or so ago would have been good for at least 1,500 bbls., are being brought in with a much smaller flow and at the present time, instead of 1,500 and 2,000-bbl. wells, 600 and 700-bbl. producers are much more in evidence. The gas pressure has also shown a very decided drop, which seems to indicate that future completions will be much smaller than those which have been recorded to date and that the period of flush production will be comparatively short.

During the week ending December 29, there were 13 wells brought in with an aggregate initial production of 6,557 bbls., compared with 11 wells during the previous week with a total initial production of 10,521 bbls. The initial production of new wells was very much smaller than heretofore, the greater majority of the completions being credited with an initial production of less than 1,000 bbls. each. During this period the daily well production has also declined, dropping from 475 bbls. to 450 bbls.

Largest Well 800 Bbls.

The largest new producer brought in was No. 6 Moore, of the Universal Consolidated Oil Co. It was finished at 3,775 feet and is rated as an 800-bbl. well, producing clean 24.6 gravity oil. This new producer was finished with a 6¼-inch oil string landed on bottom and flowing through a ⅞-inch bean under a pressure of 320 pounds. The Huntington Signal Oil Co. and Keefe-Risden also completed 800-bbl. wells, the former's No. 1 being drilled to 3,750 feet, while the latter's No. 1 Carle was completed a little deeper, 3,770 feet. Both completions were finished with 6¼-inch oil strings landed on bottom. The output from the former company's well is flowing through a ¾-inch bean under a pressure of 300 pounds and tests 24.3 degrees, while the latter, Keefe-Risden's No. 1 Carle, is flowing through a ⅞-inch bean under a pressure of 372 pounds and tests 24.5 degrees.

The Painted Hills Oil Syndicate and the Checot Oil Trust completed somewhat smaller wells, the former's No. 4 Fortuna being listed as a 554-bbl. well, while the latter's No. 1 was good for 523 bbls. Number 4 Fortuna, drilled to 3,768 feet, is producing clean 24.6 gravity oil through a 1-inch bean under a pressure of 276 pounds, while well No. 1 of the Checot Oil Trust, drilled to 3,769 feet, is producing clean 24.1 gravity oil through a ⅞-inch bean under a pressure of 295 pounds. Both wells were finished with 6¼-inch oil strings.

The Petroleum Midway (California Petroleum) completed two wells but only one was a satisfactory completion. The company's two producers were No. 1 Stock Community and No. 1 Pickler-Mitchell. Number 1 Stock Community was finished at 3,667 feet, while No. 1 Pickler-Mitchell was drilled to 3,735 feet. The former flowed 497 bbls. of 24.2 gravity oil during the first 24 hours, while No. 1 Pickler-Mitchell on the beam pumped 75 bbls. of 16.9 gravity oil. The output from No. 1 Stock Community was clean, but the low gravity production from No. 1 Pickler-Mitchell showed a cut of 12 per cent.

The Chanslor-Canfield Midway Oil Co. also put two wells on production, No. 1 Torrance and No. 22 Torrance. The former, No. 1, was cleaned out and returned to production early in the week. It is pumping 144 bbls. a day of 18.2 gravity oil. The company's No. 22 was a new well drilled to 3,775 feet. It followed No. 1 a short time later and, while it is only a small well, the oil is fairly clean. The first day's production on the pump was 238 bbls. of clean 25.7 gravity oil. The Chanslor-Canfield Midway Oil Co. completed No. 1 Kettler after drilling it to 3,810 feet, but did not actually put it on a production test. It was finished with an 8¼-inch oil string landed on bottom and should be brought in within a day or so. On the Torrance lease the company finished No. 24 and No. 25, the former drilled to 3,770 feet and the latter to 3,700 feet. Both were finished with 8¼-inch oil strings and are being bailed for production.

Waiting for Advance

Although the Fisher-Gregg Syndicate completed a fair well the company will not drill any more for the present, at least not until crude prices have reached a higher level. Had those companies responsible for the overdevelopment of Santa Fe Springs and Long Beach followed a similar policy it is quite doubtful if the price of crude would have reached its present low level. Fisher-Gregg's well No. 1 was brought in doing 694 bbls. a day of clean 25.9 gravity oil. It was drilled to 3,775 feet and finished with a 4¾-inch oil string landed on bottom.

The Sanita Petroleum Co. completed its first well at Torrance at 3,765 feet and was rewarded with a 650-bbl. producer. It, too, was finished with a 4¾-inch oil string and the oil, testing 26.1 degrees and showing a cut of 1 per cent, is flowing through a ⅞-inch bean under a pressure of 234 pounds. The Sanita's new well is on property subleased from the Fortuna Oil Co.

Hackworth & Brunwin completed the Big Star Oil Co.'s well No. 1 at 3,770 feet and secured a flow of 600 bbls. The oil, which is clean and tests 25.9 degrees, is flowing through a 1-inch bean under a pressure of 415 pounds.

The Bush-Voorhies Oil Co.'s No. 1 Rogers, finished a few weeks ago at 3,775 feet, declined so rapidly after completion that the company is making preparations to deepen it in the hope of increasing its output. Number 1 Rogers had dropped to such an extent that it was only producing about half as much as adjoining and surrounding wells. The Shell Oil Co. finished cleaning out No. 1 Frenger during the week and it is now pumping approximately 200 bbls. a day of clean 18.9 gravity oil.

The Standard Oil Co. was also successful in stimulating well production. The company's No. 1 Dominguez, which was allowed to flow into the sump for a few days in order that a gas pressure might be built up, is once again flowing into the tanks and, while the output has cleaned up, there has been no change in the low gravity of the oil, 18.5 degrees. The production, which has increased to 900 bbls. a day, is flowing through a 1-inch bean under a pressure of 420 pounds.

Long Beach

The Pan-American Petroleum Co.'s No. 2 Anderson focused the attention of operators on Long Beach and recalled to memory some of the early large wells completed in this prolific field. Number 2 Anderson, on the southeastern slope of the hill, is not only the largest producer at Long Beach today, but it ranks as one of the greatest producers ever brought in under control in this field. Up until a few months ago this particular section was not favored for large production and the bringing in of this well furnished one of the biggest surprises for some time. It was drilled to 5,070 feet and finished with a 4½-inch oil string landed on bottom. The daily production, 6,845 bbls., tests 25.8 degrees and shows a cut of 2 per cent. It is flowing with clock-like regularity through a 1¼-inch bean under a pressure of 630 pounds. The Pan-American Petroleum Co. secured the property on which this well is located early last year from the Walker Western Oil Co., and, in addition to this large producer, there is a small well, No. 1, and a driller, No. 3, making hole at 4,000 feet.

The Petroleum Midway Co. increased its production 988 bbls. a day by completing its No. 6 Fields at 4,600 feet early in the week. It was finished with a 6¼-inch oil string and the production, testing 23.4 degrees, and showing a cut of 1½ per cent, is flowing through a 1-inch bean under a pressure of 360 pounds. The company has passed No. 4 Fields for a test at 4,024 feet and if it is capable of producing 600 or 700 bbls. a day from this depth, it will probably be listed as a completion within the next week or 10 days.

The Shell Oil Co., with a daily production of approximately 53,000 bbls., increased its output 950 bbls. by completing No. 4 Andrews and No. 2 Hamilton, both new wells. The former, drilled to 5,025 feet, has 4,215 feet of 8¼-inch and 3,000 feet of 3-inch tubing at 875 feet of mesh screen. The output, 650 bbls., tests 25.4 degrees and shows a cut of 1 per cent. Number 2 Hamilton was completed at 4,150 feet and registered an initial output of 300 bbls. a day of clean 24.9 gravity oil.

Contractors Get Well

Rogers & Edwards, drilling contractors, secured a 796-bbl. well in their first attempt at Long Beach. Heretofore, the company has been drilling wells for others and, although they were comparatively late starters, they were rewarded with a fairly good well. It was finished with a 6¼-inch oil string landed on bottom, 4,564 feet, and the output, which tests 23.8 degrees and shows a cut of 5 per cent, is flowing through a ⅞-inch bean under a pressure of 278 pounds.

There were a few small wells put on production, among them being the Progressive Oil Syndicate's No. 1 Dobyns and Davis & McMillan's well No. 6. The former, a recompletion after being redrilled and deepened from 3,217 feet to 4,777 feet, was finished with a 4½-inch oil string and returned to production flowing 400 bbls. a day. The output, however, which tests 24.2 degrees, shows a cut of nearly 25 per cent. This water undoubtedly excludes considerable oil and if the company is successful in securing a shutoff the output of crude should increase at least 200 bbls. Davis & McMillan's No. 6 is a new well drilled to 4,912 feet and finished with a 4¾-inch oil string landed on bottom and cemented through perforations at 3,890 feet. The production, 300 bbls. daily, tests 25.8 degrees and shows a cut of one-half of 1 per cent.

The U. S. Royalties Co. has followed its several recent completions by bringing in No. 7 as a 365-bbl. well producing 25.8 gravity oil with a cut of ¾ per cent. It was finished with a 4¾-inch oil string landed on bottom, 4,690 feet, and is flowing through a ¾-inch bean under a pressure of 240 pounds. Lou Anger finished

(Continued on Page 92)

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

Wm. Rockefeller, December 24, New York, crude	128,574
J. C. Donnell, December 24, Philadelphia, crude	105,399
Thomas H. Wheeler, December 24, New York, crude	80,405
Belthelridge, December 25, New York, crude	74,457
Frances E. Powell, December 26, Philadelphia, gasoline	78,812
Hagood, December 26, Boston, crude	78,385
Elisha Walker, December 27, New Orleans, crude	76,550
District of Columbia, December 27, New York, crude	74,082
L. J. Drake, December 27, New York, crude	74,881
John D. Rockefeller, December 27, New York, crude	77,143
H. M. Storey, December 28, New York, crude	108,436
Antietam, December 28, Baton Rouge, crude	73,727
Durango, December 28, New York, crude	71,587
Dean Emery, December 29, New Orleans, crude	64,751
A. C. Bedford, December 29, New York, crude	116,204
Chester Sun, December 29, Philadelphia, crude	74,618
Lio, December 30, Philadelphia, refined	77,459
D. G. Scofield, December 30, New York, crude	77,475
Harold Walker, December 30, New Orleans, crude	74,298
Sunbeam, December 30, Philadelphia, crude	75,839
Coastwise	
Capt. A. F. Lucas, December 24, Seattle, refined	30,000
Montebello, December 27, Martinez, crude	78,320
Los Angeles, December 27, Martinez, crude	76,946
U. S. Tanker Kanawha, December 27, San Diego, fuel	53,544
W. S. Miller, December 27, Richmond, crude	72,947
Mericos H. Whittier, December 27, Avon, crude	76,123
Warwick, December 28, Seattle, refined	38,222
El Segundo, December 28, Point Wells, crude	29,138
R. J. Hanna, December 28, Willbridge, fuel	77,129
Aiden Anderson, December 28, Avon, crude	69,832
La Purisima, December 28, San Diego, refined	13,278
Liebre, December 29, Seattle, fuel	71,485
Alaska Standard, December 30, Astoria, refined	12,474
Export	
San Ricardo (Br.), December 20, Balboa, fuel	62,789
Levant Arrow, December 24, China, fuel	94,643
Trimountain, December 24, Japan, refined	60,932
Strombus (Br.), December 25, Germany, crude	60,727
Belridge (Nor.), December 25, Argentine, fuel	61,186
Scottish Castle (Br.), December 26, London, refined	81,436
Lebec, December 27, Chile, fuel	60,697
Akera (Br.), December 30, Balboa, fuel	45,898
From San Francisco	
Cordelia (Br.), December 25, Shanghai, fuel	59,600
Frank G. Drum, December 26, Portland, fuel	67,852
Charlie Watson, December 26, Portland, refined	12,971
Argyle, December 26, Chile, refined	28,645
H. T. Harper, December 26, Kahului, refined	31,200
Tamaha (Br.), December 30, Hongkong, fuel	57,840
Atlas, December 30, Grays Harbor, refined	15,137

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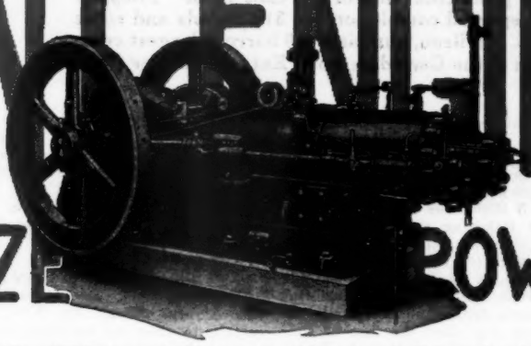

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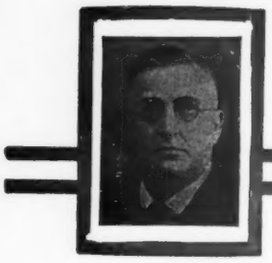


North-Central Texas Field

By Dan F. Dugan

Unusual spreads in comparative production in North Texas fields. Shappell wildcat south of Wichita Falls reported completion for 315 barrels and some water. Camp Oil & Gas Co.'s No. 2 Wilson, pumping 450 barrels, largest completion in Archer. Good showings in the Geraldine Pool. Extend Panther Pool.

FORT WORTH, Tex., Jan. 5.—Extraordinary spreads featured the production report for the North Central Texas Field for the week in review compared with the runs for the previous week. In comparison the Burkburnett Field gained 540 bbls., Electra 1,985 bbls. and the wildcat pools 280 bbls. daily. In the lost column Iowa Park appears with a reported decrease, of 1,200 bbls. and Stephens County 491 bbls., with a total production reported of 111,294 bbls. against 110,215 bbls. for the previous week, a daily gain of 1,079 bbls.

The increase in the posted price of crude was more than a welcome visitor to the North Texas Field operators. Not a completion was reported showing for exceptionally large production, though several were completed in Wichita and Archer Counties above the average for those localities.

Best Completions

In the Burkburnett territory the Gulf Production Co.'s No. 15 Dale was finished a 132-bbl. pumper at 1,870 feet. A semi-completion that is showing initial for a good well is the John O'Neil No. 6 Saunders which is swabbing 300 bbls. at 1,840 feet. The wildcat test, Shappell and others' No. 1 Jackson, 10 miles south of Wichita Falls, is reported a completion for 315 bbls. of oil and 75 bbls. of water at 1,815 feet. This test has been the "headline" of the Wichita County Field for the past two weeks and several tests are rigging up and drilling in its immediate vicinity.

The largest completion for the week in Archer County is the Camp Oil & Gas Co.'s No. 2 Wilson, which is pumping 450 bbls. around 1,600 feet. Two semi-completions showing for exceptionally large initial production in the county are the Kentucky Oil Corp.'s No. 1 Wilson, which pumped 480 bbls. the first 18 hours and the Maer and others No. 2 Wilson which swabbed 500 bbls. in 24 hours at 1,595 feet.

In the deep lime producing section of the field, Owens and others' No. 1 Walker & Caldwell in Stephens County is making 100 bbls. after a shot at 3,185 feet. This is the largest producer completed during the week from the south section of the field.

Eastland County

There were no producing completions reported from this county during the week. A duster, Root and others' No. 4 Bond, failed to produce at 3,600 feet and will be abandoned.

There are several tests of importance now drilling and nearing completion depth in nearly all sections f the county. Prominent is Turner and others' No. 1 Steele, just north of Eastland. It has reached a depth of 3,300 feet and has a good showing of oil and is making some gas. This well is on the east side of the Lake Eastland Pool. If it is a producer in the Marble Falls formation it will prove an important addition.

Three and a half miles west of Eastland on the Lewis tract the Texas Development Co.'s No. 1 is in the black lime at 3,390 feet and oil is being bailed daily. It seems the Marble Falls formation was picked up in this well at a greater depth than it was found on the Jones tract a mile to the northeast. If the well does not produce natural it is believed it can be shot into production. This well is attracting much attention because it is further out than any well yet drilled in the lake pool.

Three miles north of Eastland, Eby and others' No. 5 Miller has been thoroughly cleaned out following a shot with 220 quarts. It has been making some oil and gas through the bridge and it is believed it will be a producer when put in producing condition. The owners state they will begin drilling shallow wells to the 1,700-foot pay after the first of the year. They have 170 acres under lease and it will be thoroughly drilled out as some of it is already proven up by the five wells now producing on it.

The Rosenfield shallow well, No. 1 Gilbert, 3 miles east of Carbon, is holding up to a production of 20 bbls. a day. The sand is found at 480 feet, and half a dozen new wells will be started near the Rosenfield within a few weeks. This is the first time a paying well has been found at that depth in Eastland County and if other wells prove as good, the new sand will get a big play. The Rosenfield well is about 3 miles from any present production.

The Texas Co.'s No. 3 Hightower is showing some oil from a sand at 1,215 feet, also Ocheltree and others' No. 1 Webb is showing some oil from a shallow sand at 1,310 feet.

Archer County Active

The end of 1923 found Archer County the most active spot in the North Central Texas Field. The last advance of the posted price has been an incentive, and many tests shut down for a few months are getting ready to start. Several good producers were completed and several wildcat tests are planned for all parts of the county.

Among semi-completions reported during the week that will make commercial producers, judging from initial performances, is the Kentucky Oil Corp.'s No. 1 Wilson, Geraldine Townsite, showing for 650 bbls. at 1,590 feet. It is east of the Jetter well that came in early in the previous week, making around 750 bbls. per day from the 1,590-foot level.

Interest is directed to Murchison & Fain's No. 1-B Wilson, which swabbed 525 bbls. the first 20 hours from the 1,597-foot sand, one of the best showings yet made in the Geraldine Pool. At the end of 20 hours the swab was lost in the hole, and further test delayed on that account. The well is an outside one to the east, effecting a slight extension.

Flowing by heads and swabbing between 350 and 400 bbls. a day, from the top of the sand at 1,590 feet, Boller and others' No. 1 Wilson opens up some new territory for future drilling, being one-half mile northeast of the Jetter extension to the Wilmot Pool and almost 1 mile due southeast of the Wilmot producers.

The D. O. Johnson and others' No. 3 Wilson, Block 316, Geraldine Townsite, is showing a flush production of between 200 and 250 bbls. daily from the sand at 1,596 feet. On the same block to the south No. 4 is standardizing on top of the pay in the neighborhood of 1,600 feet.

A half-mile extension to the producing area to the east of the Panther Pool resulted from a 150-bbl. producer by Riner and Baily's No. 2 Wilson, located in the northeast corner of Block 8, Section 29. The top of the pay was picked up at 1,620 feet and was drilled a short distance.

East of Dundee on Section 8, Lanning & Monninger set casing on top of a good-looking sand and will test in the next day or two.

Quiet in Wichita County

The past week was a quiet one in this county, though the New Year is certain to show an increase, principally due to the advance in crude, and some scarcity caused by a demand by local refineries.

The largest completion is the Shappell and others' No. 1 Jackson, 10 miles south of Wichita Falls and a semi-wildcat, reported showing initial 315 bbls. of oil and some water at 1,815 feet.

The Panhandle Refining Co.'s No. 1 Chilson, due north of the Shappell Oil Co.'s discovery well, found the sand at 1,814 feet but the well failed to come up to expectations as it is making only around 20 bbls. at 1,814 feet. the same depth sand as the discovery well is producing from.

The Gulf Production Co.'s No. 15 Dale is a completion and is showing initial 132 bbls. at 1,870 feet. John O'Neil's No. 6 Saunders is swabbing 300 bbls. at 1,840 feet and not yet completed.

In the Shappell district some of the offset tests started following the discovery are scheduled to hit the pay depth early this month, and another week may witness some developments that will indicate the trend of the sand. Four wells are drilling and two derricks are up, with probably as many as six locations awaiting the results of the first tests.

Completions reported in the Burkburnett and Hirschi pools are the Gulf Production Co.'s No. 15 Dale, 132 bbls. at 1,870 feet.

Drilling—Baldwin Brothers' No. 12-C Kennedy, drilling in brown shale without any showing at 1,600 feet Gulf Production Co.'s No. 1 Saunders, standardizing on top of an oil sand at 1,821 feet; McDabb Oil Co.'s No. 2-A Saunders, missed the pay sand and is shut down at 1,890 feet; Magnolia Petroleum Co.'s No. 22 Holcomb, drilling at 940 feet; No. 20 Hortoin, fishing for underreaming lugs at 900 feet; No. 21 Hortan, drilling at 540 feet; John O'Neil's No. 5 Saunders, standardizing on top of a broken sand at 1,822 feet; Perkins and others' No. 3 Saunders, small show of oil and will probably shoot a sand at 1,830 feet; No. 4 Saunders, drilling in blue shale at 1,565 feet; Pigg Oil Co.'s No. 19 Fisher, rigging to pump an oil sand at 1,890 feet.

Wichita-Electra

Completions—Kruger and others' No. 7 Waggoner, 52 bbls. at 1,815 feet; Empire Gas & Fuel Co.'s No. 26 Burnett, 1 bbl. at 1,650 feet; Chappell and others' No. 1 Jackson, 315 bbls. at 1,815 feet.

Drilling — Magnolia Petroleum Co.'s No. 7 Douglas, drilling at 895 feet; Memphis Petroleum Co.'s No. 3 Honaker, set 5-7/8-inch casing with a packer at 1,050 feet; Rowe Drilling Co.'s No. 1 Waggoner, bailing and showing a little oil at 1,850 feet; Bass and others' No. 6 Waggoner, broken sand showing some oil at 1,900 feet; Four States Oil Co.'s No. 7 Jennings, drilling at 1,150 feet; Fisher and others' No. 3-B Fisher, drilled a water sand at 1,710 feet, cased it off and drilling at 1,755 feet; Gulf Production Co.'s No. 1 Miller, drilling at 1,100 feet; Houston Oil Co.'s No. 14 Waggoner, drilling in blue shale at 1,000 feet; Hartford Trust Co.'s No. 6-A Burnett, drilling at 950 feet; No. 12 Burnett, drilling a sandy lime at 1,520 feet; Jefferson Oil Co.'s No. 4 Jeff Waggoner, drilling an oil sand at 1,495 feet; Magnolia Petroleum Co.'s No. 31-A Waggoner, drilling in brown shale at 1,135 feet; No. 1-A Burnett, shot a sandy shale formation at 2,100 feet; has 40 feet of oil in the hole and cleaning out; Neal and others' No. 1 Waggoner, drilling in a water sand at 2,065 feet; Sproles and others No. 1 Fisher, reaming to bottom at 810 feet; Simms Oil Co.'s No. 14 Burnett, drilling in a lime formation without any showing at 1,815 feet; Texhoma Oil & Refining Co.'s No. 15-E Waggoner, drilling at 535 feet; No. 12-F Waggoner, a water sand at 1,460 feet and drilling at 1,720 feet; No. 1-C Burnett, standardizing to pump and test an oil sand at 1,350 feet; No. 28-A Waggoner, drilling in blue shale at 1,300 feet; Carter and others' No. 3 K. & K. drilling in brown shale at 980 feet; Inland Oil Co.'s No. 1 K. & K., rathoing at 1,790 feet; Staley and others' No. 1 K. & K., drilling at 420 feet; Comac Oil Co.'s No. 1 Terhune, drilling in rock at 1,878 feet; Fisher and others' No. 1 Chilson, drilling at 1,000 feet; Hanes and others' No. 2 Watkins, drilling at 165 feet; Knight and others' No. 1 Dutton, drilling at 100 feet; Texhoma Oil & Refining Co.'s No. 2 Hamilton, drilling in shale at 1,050 feet; Brown and others' No. 1 Waggoner, drilling at 1,835 feet; Dennis and others' No. 1 Beckett, drilling at 400 feet; Robinson and others' No. 1 McCaleb, drilling in shale at 2,100 feet; Noble Oil Co.'s No. 1 Waggoner, drilling up a 10-inch casing shoe at 1,080 feet; South Vernon Oil Co.'s No. 1 Stephens, swabbed 10 bbls. in 24 hours from a sand at 1,720 feet, will probably drill deeper.

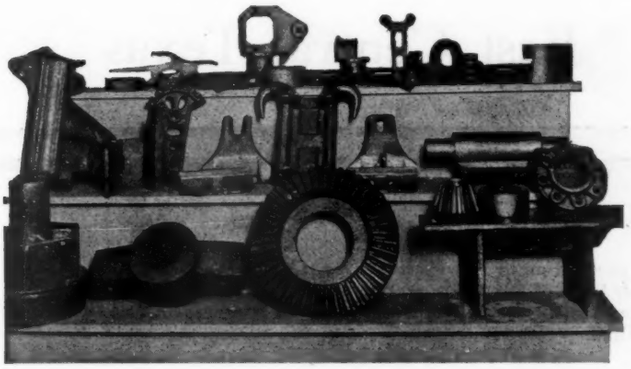
Archer County

Completions—Barkley and others' No. 2 Wilson, dry at 1,840 feet; Boyd and others' No. 1 Carter, dry at 1,615 feet; Camp Oil & Gas Co.'s No. 2 Wilson, 450 bbls. at 1,600 feet; Dale and others' No. 7 Wilmot, 125 bbls. at 1,600 feet; Dunn and others' No. 1 Wilson, 150 bbls. at 1,595 feet; Featherstone and others' No. 7-C Wilson, 250 bbls. at 1,600 feet; R. M. F. Oil Co.'s No. 2 Egbert, 150 bbls. at 1,601 feet; same company's No. 1 Wilson, 150 bbls. at 1,595 feet; Shamrock Oil Co.'s No. 4 Richardson, 60 bbls. at 1,360 feet; Sibley and others' No. 7 Wilmot, 125 bbls. at 1,595 feet; 66 Oil Co.'s No. 6-B Wilson, 176 bbls. at 1,580 feet; Thomas and others' No. 1 Ford, dry at 1,835 feet; Underwood Drilling Co.'s No. 1 Wilson, 70 bbls. at 1,600 feet; Dr. Wallace's No. 15 K. & K., 100 bbls. at 1,760 feet; The Texas Co.'s No. 10 Carter Bros., 200 bbls. at 1,580 feet.

Drilling in Archer

Drilling—Boller and others' No. 3 Wilmot, drilling at 1,240 feet; Brannon and others' No. 1 Wilson, at 850 feet; Bridwell and others' No. 1 Wilson, drilling in hard rock at 1,670 feet; Burns and others' No. 1 Wilson, drilling at 200 feet; Camp Oil & Gas Co.'s No. 3 Wilson, drilling in brown shale at 1,200 feet; No. 4 Wilson, drilling in blue shale at 1,515 feet; Dale and others' No. 3 Wilson, drilling at 1,225 feet; Dixon and others' No. 1 White, trying to set a plug, sand at 1,595 feet; showing some oil; Featherstone and others' No. 5-C Wilson, swabbing 225 bbls. daily from a sand at 1,600 feet; No. 8-C Wilson, drilling at 1,150 feet; Graham and others' No. 1 Wilson, at 1,225 feet; Gould and others' No. 2 White, setting 6⅝-inch casing at 1,420 feet; Green and others' No. 1 Abercrombie, drilling in rock at 850 feet; Gwynn and others' No. 6 Mrs. Carter, has 800 feet of oil in the hole from a sand at 1,375 feet; Hardeyeate and others' No. 1 Parrish, standardising on top of an oil sand at 1,606 feet; Jetter and others' No. 2 Wilson, drilling at

(Continued on Page 70)



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By Staff Correspondent.

With wells on the pump production in Powell increases to an average of 91,078 bbls. for the week. A total of 591 wells producing. Production may increase again before the permanent settling-down process takes place. A few more locations to be drilled.

CORSICANA, Tex., Jan. 7. — The Powell Field produced 637,545 bbls. of oil last week, an average of 91,078 bbls. a day, a gain of over 10,000 bbls. a day over the average of the week before. The gain was made after 100 wells which had been "dead" were put on the pump. The field had got down to 75,000 bbls. a day with so many wells not producing, but when all were put to pumping and the field had passed the 91,000-bbl. mark, it continued day after day with little change in the output.

While no new work was started for the three weeks, a half dozen more wells will soon be drilling. The last general round-up of the field showed 52 wells below 2,800 feet in depth. Some of these were on top of the sand, drilling in the sand, or being made ready to put on the pump having failed to flow naturally. Six wells drilling had not reached the 2,800-foot level. There were only two derricks up and six locations made. These locations will soon be the scene of drilling operations.

All but a very few of the drilling wells in the field could be completed in a few days and they may boost the production temporarily to as high as 100,000 bbls. a day if all of them are completed without delay. Some of them are deep enough to warrant the assumption that they may be dry. The Seaport Petroleum Co.'s No. 2 Vinson on the Harlin survey is drilling below 3,190 feet. Millerman & Dorney's No. 1 Clements, on the Smith survey, is shut down at 2,992 feet. The Atlantic Oil Producing Co.'s No. 1 Goldman, 46 acres on the Lockhart survey, is drilling around 3,000 feet. E. C. Meade and other's No. 1 Autry, on the Autry survey is below 3,003 feet, but found salt water at 2,995 feet. The Ranger Vindicator Oil Co.'s No. 1 Thornton, a wildcat on the Hazard survey, is shut down at 5,307 feet.

Recent Completions

Finley and others have abandoned their test on the Keyser farm, Doon survey, north of the field at 3,150 feet. They had no showing of any kind.

The Humble Oil & Refining Co. abandoned the location for No. 13 G. Kent, on the Smith survey, on the west side of the field.

The Humble Oil & Refining Co.'s No. 1 Hill, on the Smith survey, was good for 360 bbls. the first day from sand at 2,915-50 feet.

Garland Kent's No. 9 Fleming, Harris survey, swabbed 200 bbls. a day from sand at 2,912-43 feet.

Strukey & Strukey's No. 1 Hill, Smith survey, started at 450 bbls. from sand at 2,840 to 2,944 feet.

The Atlantic Oil Producing Co.'s No. 11 Kellum, Harris survey, made 1,340 bbls. the first 24 hours from a sand at 2,858 to 2,921 feet.

The Sims Oil Co.'s No. 2 J. A. Boyd, got sand at 2,988 to 2,964 feet, but the well was good for only 15 bbls. a day.

With nearly all the wells in the field on the pump, and 591 wells producing, the production on January 2, when the last round up of production by lease was made showed an output of 91,261 bbls. On December 19, when the last previous accounting was made the production was 85,053 bbls.

The production of the Humble Oil & Refining Co. was increased from 21,960 bbls. to 25,735 bbls. The Tidal Buttram Oil Co.'s output increased from 3,327 bbls. to 6,256 bbls. The Gulf Production Co.'s production from 10,927 bbls. to 12,350 bbls. and the Humphreys Oil Co.'s from 8,920 bbls. to 10,986 bbls. These were the most pronounced gains. There were also some losses.

It is believed that many wells in the field can be improved by cleaning out, and that Powell production will be maintained at above 80,000 bbls. for a considerable period when the wells have been overhauled.

The following table will show the production by company and lease as of January 2 and December 19, for comparative purposes:

	No. Wells	Prod., Jan. 2	Prod., Dec. 19
Humble Oil & Ref. Co.:			
Blumrosen	4	268	330
Brown	6	690	1,035
Cerf A	9	484	77
Cerf B	3	155	.....
Crews	10	1,854	2,251
Davis	16	2,579	1,756
Fleming A	8	1,174	1,622
Fleming B	5	752	196
Gentry A	10	1,896	1,586
Gentry B	3	340	850
Hill	1	541	.....
Humphreys	22	3,620	2,493
Irvine A	5	314	335
Irvine C	10	752	649
G. Kent	12	2,960	1,849
E. L. Kent	3	129	.....
R. I. Kent	1	72	72
W. J. McKie A	5	216	165
W. J. McKie B	10	2,385	2,672
Murchison	3	0	10
Ramsey A	9	2,029	340
Ramsey B	13	1,700	2,287
Walker	7	1,025	885
Total	173	25,735	21,960
Tidal Oil Co. & Buttram Pet. Corp.:			
Crews	7	1,494	620
Phillips	11	2,341	1,173
Bressie	1	305	.....
Ramsey A	8	1,958	1,216
Ramsey B	7	93	263
Thompson	4	65	55
Total	38	6,256	3,327
Gulf Prod. Co.:			
Barron	7	796	636
Blumrosen	5	140	108
Bush	2	775	884
Christian	6	274	196
Crews	16	7,905	6,588
Gentry	7	548	634
Murchison	8	1,478	1,286
McKie	1	124	181
Smith	5	217	228
Witherspoon	8	93	186
Total	65	12,350	10,927
Humphreys Oil Co.:			
Fair	1	30	65
Kent	8	345	410
R. I. Kent	3	80	75
Burke	1	30	65
McKie	62	10,456	8,205
Kenner	2	10	10
Springfield	2	35	90
Total	79	10,986	8,920
U. S. Tex. Oil Co.:			
Burke	4	350	310
Ramsey	4	90	35
Total	8	440	345
Skelly Oil Co.:			
Gentry	1	0	0
Ramsey	3	191	300
Keith	7	2,475	2,000
Total	11	2,666	2,300
Kirby Pet. Co.:			
W. A. Brown	5	270	412
McKie	3	885	908
Fleming	2	0	1,540
Total	10	1,155	2,860
McMan Oil Co.:			
Chapman	10	1,650	930
Chapman	6	1,864	1,580
Total	16	3,514	2,510
Roxana Pet. Corp.:			
Blumrosen	4	115	.....
McKie	8	160	350
McKie A	8	2,997	1,495
Total	20	3,272	2,845
E. L. Smith Oil Co.:			
Keith	8	2,030	4,676
Ramsey	4	415	434
Total	12	2,445	5,203
The Texas Co.:			
Fleming	12	1,415	1,055
I. T. Kent	15	1,617	1,655
W. J. McKie	8	315	425
Total	35	3,347	3,135
Atlantic Oil Prod. Co.:			
Irvine	13	1,456	1,315
Kellum	7	2,386	2,846
Total	20	3,842	4,161
Sun Oil Co.:			
Barron	1	20	.....
G. R. Kent	4	575	450
Total	5	595	450
Simms Oil Co.:			
Boyd	3	664	1,760
Kellum	1	277	348
Blumrosen	2	203	None
Rose	4	614	241
Howell	3	103	1,666
Total	11	1,861	4,015
Hughes Dev. Co.:			
McKie	13	616	440
McKie	1	10	5
Alexander	4	2,183	2,560
Total	18	2,549	2,905
Empire Gas & Fuel Co.:			
Sweatman	1	113	75
R. E. Brooks:			
Cerf	7	600	650
Garland Kent:			
Fleming Kent	14	720	900
Mitchell & Jones:			
Burke	2	330	370
New Domain Oil Co.:			
R. F. Kent	5	295	305
Witherspoon Oil Co.:			
Burke	9	2,237	1,800
Mutual Oil Co.:			
Howell	6	830	1,520
Collins & Wheelock:			
G. Kent	2	190	Shut
Elliott and others:			
Hill	1	2,325	300
Parker and others:			
Cerf	2	345	1,320
Texas & Brazos Valley R. R.:			
Right of Way	2	450	300
Barclay & Meadows:			
Cerf	1	795	800
Bass and others:			
Gentry	3	945	0
Terrel Prod. Co.:			
Hu..phreys	1	95	300
Strukey & Strukey:			
Hill	1	800	.....
Upchurch and others:			
Fleming	1	135	300
Webster and others:			
Boyd	1	195	.....
Yoder and others:			
Harvard	1	735	300
Miscellaneous:			
Springfield and Christian	10	795	300
Total	591	91,261	85,053

The pipe line runs as of January 2 were as follows: Cobden Fuel Co., 2,000 bbls.; Gulf Pipe Line Co., 10,400 bbls.; Humble Pipe Line Co., 40,227 bbls.; Magnolia Petroleum Co., 5,780 bbls.; Prairie Pipe Line Co., 19,920 bbls. Sinclair Pipe Line Co., 13,800 bbls.; Shelly Oil Co., 2,400 bbls.; Simms Oil Co., 3,460 bbls.; Sun Oil Co., 590 bbls.; Texas Pipe Line Co., 885 bbls.; Tidal Oil Co., 5,700 bbls.; U. S. Tex. Oil Corp., 300 bbls.

Kansas Oil Field News

By C. D. Lockwood

The increase of production in the well brought in last week by Wilson & Martin in the Wilmot Pool in Cowley County, was the only interesting event of the week in the Kansas fields. When No. 1 Eastman, in the SW cor. Section 5-31-6, was drilled 2 feet deeper in the pay, making its total depth 2,854 feet, the production jumped to 15 bbls. an hour and it was still making about 7,000,000 feet of gas. Gas sand was topped at 2,834 feet and the oil pay at 2,850 feet.

Considerable activity was in evidence around the new pool opened up in Greenwood County last week and new locations were being staked nearby. The Mission Oil Co. located its No. 1 Aagard, NW cor. SE, Section 14-24-9, and Rodgers and others had a rig in place for their No. 1 Aagard, NW cor. SW NE, in the same section. Rigs were also up for Bason & McGinnis' No. 2 Aagard, NE cor. SE NW, and for Rodgers and others' No. 2 Bratton, NW cor. SW NW NE, Section 14-24-9. Miller and others were drilling at 1,800 feet in their No. 1 Robson, SE cor. NW NW, and Bason and others were spudding their No. 1 Robson, NE cor. SW NW, in the same section. Same Company completed its No. 1 Bratton, SW cor. NE NW, same section, for a 100-bbl. producer after a 60-quart shot in sand at 2,144-99 feet. Rodgers and others' No. 1 Bratton, SW cor. NW NE, Section 14-24-9, which was brought in last week, flowing at the rate of 60 bbls. an hour, was shot with 160 quarts in sand at 2,098-2,170 feet, and made 700 bbls. after the shot. It was completed.

A rig was on the ground for the Mid-Kansas Oil & Gas Co.'s No. 3 Ladd, SW cor. SE, Section 19-25-9, and for the same company's No. 2 Martindale, CEL SE NE, Section 31-23-10, and No. 1 Anderson, SE cor. SW, Section 14-24-9. McGinnis, Bittner and others also had timbers on the ground for their No. 3 Brotton, SE cor. NE NW, same section.

A new location was made for the White Eagle Oil & Refining Co.'s No. 3 Edwards, CSL SE SW NE, Section 13-23-10, and a rig was in place for the same company's No. 2 Edwards, CWL NW SW NE, in the same section.

The Empire Oil & Gas Co. spudded and shut down its No. 7 Seely, C NE SE NE, Section 5-23-11, and had timbers on the ground for its No. 6 Pratt, SE cor. NW, Section 13-23-10, and for No. 7 Pratt, NE cor. SW. in the same section.

Other Operations

The Transcontinental Oil Co. located its No. 1 Olson, SW cor. SE, Section 11-24-9. Simmons and others had timbers on the ground for their new test in No. 1 Lindsay, SW cor. Section 7-23-12. Another location was also made by Weis and others on the Mather farm for their No. 3, CWL SE NE NW, Section 31-22-10. Gray and others had a rig built for their No. 5 Clark, NE cor. NW SE, Section 28-22-11.

Pulaski & Simmons topped the lime at 2,025 feet in their No. 1 Imthurn, SE cor. NW, Section 19-22-12, and were drilling ahead at 2,385 feet. Titus and others made a location for No. 1 Prather in the NW cor. Section 29-22-10.

The Russell County wildcat remained shut down again this week although activity will be resumed there shortly. The Sinclair line is about ready to be tested and when that work is completed, the well will be deepened in the hope of increasing the production.

Two rigs were on the ground for tests near the wildcat in Cowley County brought in some time ago by Waite Phillips and the Independent Oil & Gas Co. The rigs are for No. 1 Glasgow, NE cor. SW, Section 20-33-3, offsetting the discovery well, No. 1 Johnson, to the west, and for No. 1 Westman, SW cor. NE NW, in the same section. Both belong to the same interests. No. 1 Johnson was at last reports making 347 bbls. from sand at 3,199-3,209 feet, the hole

(Continued on Page 94)

For *8 Years* Clark Has Used Williamsport Lines

Photo Taken at Stroud Field's Largest Well.

The Stroud Field's second and largest well, brought in 2 hours before Christmas, with 1,800 barrels initial production, is shown above. This well was drilled with Williamsport lines, under the supervision of J. L. Clark (right).

Mr. Clark is Superintendent and a partner in the firm of Miller & Tyrrell, drilling contractors operating upward of 20 strings of tools in various fields. Richard Stanton, Assistant Superintendent, is shown at center, while at the left is G. H. Musgrave, the Williamsport Wire Rope Company's staff representative at Bristow.

For 8 years Mr. Clark's firm have used Williamsport lines. They have found WILLIAMSPORT Lines "absolutely satisfactory" and think that is about all they have a right to ask for any product.

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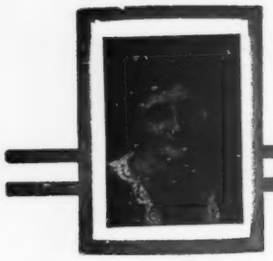

North Louisiana-Arkansas

By M. L. Vaughn

Two potential pools in North Louisiana, in Union Parish and Cotton Valley, Webster Parish. Hodges and others' No. 1 Murphy, Union County, Smackover, flows 200 bbls.; Gulf Refining Co.'s No. 3 J. G. Murphy, pumps 140. Standard's No. 3 Solmson, Ouachita County, 200.

SHREVEPORT, La., Jan. 7.—A decrease of 3,235 bbls. a day in the pipe line runs for the past week is attributed to the general lessening of activity during the holiday season. The falling off in production was entirely in the Arkansas districts, the North Louisiana fields showing an increase of 145 bbls. a day. Runs from the various fields in North Louisiana and Arkansas were as follows:

North Louisiana	
Caddo light	8,440
Caddo heavy	3,135
De Soto and Red River	5,550
Elm Grove	1,080
Haynesville	23,320
Homer	9,000
Bellevue	5,880
Total	54,415
South Arkansas	
El Dorado	11,895
Calion	7,435
Smackover light	27,910
Smackover heavy	102,010
Stephens	5,360
Total	154,600
Total	209,025
Total last week	212,260
Decrease	3,235

Two Potential Pools

In addition to the usual dullness incident to the holiday season, excessive rains during December resulted in a general decrease in activity throughout the Arkansas and North Louisiana oil fields and it will probably be several weeks before normal conditions will again prevail.

There is little doubt in the minds of oil operators in this district that two potential pools have been discovered in the North Louisiana territory and that the close of the rainy season will be followed by a rush of activity in the direction of the new pools. At present impassable roads and overflowing streams are making it practically impossible to start any great amount of development.

The most promising of the new pools is located in the north end of Union Parish, where Palmer & Davidson's test on the Frost Johnson lease has been holding the attention of oil operators during the past two months. The well was opened during Christmas week for an hour and a half, during which period it made a 40-bbl. head of 36 gravity oil. Since that time, the well has been opened up and pumped for short periods with the result that its production is estimated at 200 bbls. a day. This, however, is more or less guess work, as the well has never been opened up long enough to really know anything about it. Old line companies have been paying as high as $500 an acre, with a one-twenty-fourth overriding royalty for leases in vicinity of the Union Parish well, thus showing their confidence in the potential value of the new pool.

The Cotton Valley well in Webster Parish is still an acknowledged puzzle to the oil fraternity. This test was also opened up during Christmas week when it made one heavy head of oil, almost immediately followed by a resumption of the gas flow with its accompanying spray of oil. It is estimated that this well would produce, if left wide open, between 200 and 300 bbls. of oil and 18,000,000 feet of gas, but as the conservation laws will not permit this waste, it will of course be impossible to obtain any such amount of production. Interest at present is centered on Palmer & Davidson's second test in this territory, No. 1 Green in Section 19-23-1e, which will be drilled in in a day or two and which it is hoped will establish the status of the new pool more accurately.

Carbon Industry Grows

The carbon industry continues its rapid growth in the Monroe gas territory. Site has been cleared for another large plant to be built near Sterlington, in Ouachita Parish, by the Magnolia Carbon Co. This company is capitalized at $1,000,000 and is headed by W. Lynton Etheridge, president of the Monroe Automobile and Supply Co.

The Excelsior Pipe Line Co. of Bastrop, has started the construction of an 8-inch line from the Morris wells in the vicinity of Bastrop, to the site of the Brown Paper Mill Co. at West Monroe, a distance of 25 miles. The Excelsior Pipe Line Co. is a subsidiary of the Henry C. Morris interests and it is expected the new line will be used in supplying Monroe with gas for domestic purposes as well as for manufacturing plants in the vicinity.

Geological Notes

H. D. Easton, oil geologist of Shreveport, has been awarded space in the Smithsonian Institute for a specimen of fossil coral apparently representing an entirely new species. The fossil was found at a depth of 1,410 feet in a well at Smackover and was examined by T. W. Vaughan of the United States Geological Survey, who pronounced it of sufficient interest to be included in the "List of Accessions in the National Museum."

At the monthly meeting of the Shreveport division of the Southwestern Geological Society, held Friday night at the city hall, Prof. H. V. Howe, head of the geological department of the Louisiana State University, presented a paper of scientific and practical interest concerning recent work on the Oligocene formations of Louisiana, showing the relation of these beds to similar beds in other parts of the world. A large and carefully labelled collection of fossil shells was displayed, which had been used in studying and identifying the different strata.

Smackover Field

Union County—Five completions were made during the week in the Union County area of the Smackover Field, four of them producers with production aggregating 485 barrels.

The Federal Petroleum Co.'s No. 2 W. H. Murphy, in Section 22-16-15, came in at 2,029 feet, flowing through 2½-inch tubing and packer at the rate of 125 barrels a day.

The Gulf Refining Co. completed No. 3 J. G. Murphy, in Section 17-16-15, pumping 140 bbls at 2,040 feet in 60 feet of broken sand.

Hodges and others completed No. 1 Murphy, in Section 7-16-15, flowing 200 bbls. at 2,100 feet in 9 feet of sand.

The Standard Oil Co. completed a 20-bbl. pumper at 2,269 feet in Saxon C-1, Section 5-16-16.

The Natural Gas & Petroleum Co. has abandoned No. 1 Primm, Section 1-16-16, at 2,000 feet.

Drilling Operations

Considerable increase in drilling activity is noted in the Union County field, following a shutdown during the holiday period.

The Arkansas Natural Gas Co. has set 6-inch casing at 2,145 feet in No. 6 Cullens, Section 4-19-15, and Browder and others at 1,940 feet in No. 1 Burns, Section 17-16-15. Clark & Melat are rigging up to drill No. 3 Wells in Section 15-16-15; Constantin Oil & Refining Co. is bailing casing at 2,170 feet in No. 3 Hinson, Section 7-18-15, and Ganzell and others are drilling out plug in 6-inch casing at 2,247 feet in No. 1 McGraw, Section 7-16-16. Estes and others have the hole full of fluid, 50 per cent salt water, at 2,260 feet in No. 1 McGraw, Section 1-16-17, and they are pulling liner to reset with packer in 10 feet of sand.

The Federal Petroleum Co. has set 6-inch casing at 1,940 feet in No. 3 W. H. Murphy, Section 22-16-15, and is arranging to abandon at 3,218 feet No. 2 Union Saw Mill Co., Section 28-17-12.

The Gulf Refining Co. has set 6-inch casing at 1,940 feet in No. 1 Jameson, Section 21-16-15, drilling at 50 feet in No. 4 G. E. Murphy, Section 8-16-15, and is arranging to pump Lewis Werner A-1, Section 35-15-17, standing with 1,000 feet of fluid in the hole at 2,280 feet.

Haviland and others tested dry at 2,006 feet No. 1 Clawson, Section 23-16-15, are pulling liner to drill deeper; Higgins Oil Co. is drilling at 1,980 feet in No. 3 James, Section 21-16-15, and the Houston Oil Co. is drilling at 950 feet in No. 1 Ballard, Section 21-16-15.

The Humble Oil & Refining Co. is arranging to pump No. 4 E. G. Murphy, Section 14-16-15, and is drilling in rock at 300 feet in No. 5 in the same section.

The Humphreys Petroleum Co. has derricks up for No. 1 L. Hicks and No. 2 R. J. Hicks in Section 20-16-15, and the Humphreys Oil Co. is drilling at 700 feet in No. 1 Hays, Section 21-16-15.

The McPherson Oil Co. is setting 4½-inch casing at 1,950 feet in No. 1 Murphy, Section 17-16-15.

The Natural Gas & Petroleum Co. has 19 feet of broken sand in No. 1 Murphy, Section 17-16-15, and is arranging to set liner at 2,125 feet; No. 1 Houston, in Section 12-16-15, is blowing wild through 425 feet of broken hole and they are trying to make connections. The well is estimated at 20,000,000 feet of gas and 50 bbls. of oil at 2,367 feet.

Nelson and others' No. 1 Childs in Section 17-16-16, formerly reported abandoned when it tested salt water at 2,290 feet, is being drilled deeper and is showing oil at 2,325 feet.

Noe and others are drilling at 1,735 feet in No. 2 Wells, Section 15-16-15; Lion Oil & Refining Co. is drilling at 1,015 feet in No. 2 Bilyiu, Section 8-16-15, and Page and others are arranging to pump No. 1 Holmes, Section 23-16-15, at 2,010 feet.

Arranging to Test Sand

The Pure Oil Co. is arranging to test 22 feet of broken sand at 2,055 feet in No. 3 Craig, Section 15-16-15; Quaker City Petroleum Co. is drilling at 2,125 feet in No. 1 Sloan, Section 14-17-15, and the Roxana Petroleum Co. has 800 feet of oil in the hole in No. 4 Wells, Section 15-16-15, and is setting 2½-inch tubing with packer at 2,012 feet.

Sanford and others are drilling at 2,035 feet in No. 1 Murphy, Section 8-16-15; Smackover Petroleum Co. has 500 feet of oil in the hole in 12 feet of sand in No. 2 Murphy, Section 14-16-15, and is arranging to pump. Derrick is up for No. 3 in the same section.

The Standard Oil Co. is arranging to pump No. 10 Alphin in Section 11-16-15, set 6-inch casing at 1,940 feet in No. 1 Lingelbach, Section 22-16-15, and arranging to pump Saxon B-3 in Section 5-16-16, at 2,295 feet.

The Steele Oil Co. is arranging to test at 2,303 feet in No. 1 Rhodes, Section 12-16-17; Steen and others have set 10-inch casing at 240 feet in No. 1 Tufts, Section 7-17-14, and the Sun Co. has 800 feet of oil in the hole in 70 feet of broken sand in No. 4 Hays, Section 3-16-15, and is arranging to pump at 1,965 feet.

The Texas Co. tested salt water at 2,083 feet in No. 2 Cook, Section 23-16-15, and is arranging to plug back; Willroy and others drilled to 1,935 feet in No. 1 Goodwin, Section 23-16-15, and are standing idle, and Woodley and others are drilling at 2,767 feet in No. 1 Townsend, Section 6-18-14, with a showing of salt water.

The Weisman Oil Co. is rigging up to drill No. 2 Harrell, in Section 17-16-15.

Smackover Completions

Six producers and one gasser were completed in this district last week, adding 650 bbls. production to the daily output of the field and 30,000,000 feet of gas. In the heavy oil territory the Roxana Petroleum Corp. completed No. 1 Laney, Section 31-15-15, making 30,000,000 feet of gas with 900 pounds rock pressure at 2,285 feet. The well shows a little heavy oil. In Section 28-15-15 the Simms Oil Co. brought in No. 6 Hildebrand, flowing 65 bbls. at 2,035 feet.

In the northeast light oil territory the El Dorado Union Oil Co. put No. 2 Smith on the beam, Section 36-15-17, with 120 bbls. production at 2,280 feet. The Gulf Refining Co. completed No. 1 Meek, Section 19-15-16, flowing 100 bbls. through 2-inch tubing at 2,250 feet, and No. 2 Patton, Section 32-15-16, flowing 105 bbls. through 2-inch tubing at 2,250 feet.

The Magnolia Petroleum Co. brought in No. 3 Patton, Section 32-16-16, flowing 100 bbls. through 2½-inch tubing at 2,250 feet. In Section 29-15-16, the Standard Oil Co. completed No. 3 Solmson, flowing 200 bbls. at 2,280 feet.

Drilling Operations

A summary of operations in Ouachita County last week showed 3 wells waiting on standard rig; 10 temporarily abandoned; 49 drilling; 15 rigging up; 29 derricks, and 2 locations. Anderson and associates have a derrick up for a well on fee acreage, in Section 26-15-17. Burton, trustee, is down 2,050 feet in No. 6 Hughes, Section 28-15-16.

The El Dorado Union Oil Co. is down 1,903 feet in No. 3 Shirey, Section 33-15-16, and in Section 28-15-16 is drilling at 2,200 feet in No. 2 Hughes, a well completed last May as a 50-bbl. producer at 2,031 feet.

Giles and others set 6⅝-inch casing at 1,850 feet in No. 3 Watts, Section 30-15-16. The Gulf Refining Co. has rig up for No. 1 Harrison and derrick built for No. 2, Section 30-15-16; rigging up No. 2 Stringfellow, Section 29-15-16; and rigging up No. A-4 Umsted, Section 35-15-15.

Howe and associates have rig up for a well on the Elliott lease in Section 24-15-17. The Houston Oil Co. has derrick built for No. 3 Patton, Section 31-15-16. Hunt and others are setting 6-inch casing at 1,840 feet in No. 3 Solmson, Section 30-15-16. Lanier and others set 6-inch casing at 1,845 feet in No. 2 Shirey and set 10-inch casing and drilled to 1,920 feet in No. 3, Section 30-15-16.

Lewis & Clark set 6-inch casing and drilled to 2,300 feet in No. 4 Berry and have rig up for No. 5, Section 24-15-17.

(Continued on Page 88)

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Fields of the Central West

By Whit

O. C. Fink Syndicate's 40-bbl. producer in Mercer County, Ohio, extends field. Lants, Gregg and associates find 60-bbl. well in Wood County, Old Lima Field. Weidman and others have 4,000,000 gasser in Richland County, opening territory. Western Illinois to get a play in spring.

FINDLAY, Ohio, Jan. 7.—With below zero weather, but little has been accomplished by the drill in some parts of the Central West, as the old Lima Field of northwestern Ohio, Indiana and Illinois were almost void of completions. Report from Liberty Township, Mercer County, is that the O. C. Fink Syndicate's test on the Jacob Bollenbecker farm, Section 8, showed a flush of 40 bbls. after shot and extends the field about a mile south of the older development. In the same township, the Celina Petroleum Co.'s No. 1 Peter Brehn, Section 10, is drilling as is Egger and others' No. 1 Philip Stroble farm, Section 5. The Celina Petroleum Co.'s No. 1 Brehn Brothers' farm, Section 9, and No. 1 John Brehn, Section 10, are small producers, but as good as usually found these days in the old producing area.

One well in the old Lima Field that attracts much attention is that on the Fred Schulte farm, in Section 35, Lake Township, Wood County, between the old Wood County Field and the developments in Ottawa and Lucas Counties, in territory supposed to be tested out in the early days. This is Lantz, Gregg and others' No. 4 which showed 60 bbls., which is above the average completion, and this immediate territory should get a nice play the coming summer, which means that the territory between Woodville and Toledo will be more thoroughly drilled than ever before, as there are large blocks of acreage where no tests have ever been drilled.

Central Ohio Field

Twenty-two completions were reported from the Central Ohio fields during the week, of which 10 were gas wells, 11 dry holes and 1 oil well, showing for about 3 bbls. The dry holes being the largest number indicate that most of them were outside wells drilled in an effort to extend the present producing areas. In the extreme south end of the field, in Meigs, Athens and Jackson Counties, there will be a number of tests made in hopes of carrying out the gas field as far south as the Ohio River. During the week the Ohio Fuel Supply Co. made two new locations in Sutton Township, Meigs County. One on the C. W. Cornell 55 acres, Section 20, and another on the Curtis Gilmore 87 acres, Section 32. This company is drilling at No. 1 on the W. G. Nease 7 acres, Section 25, same township, and rigged up at its test on the Bertlett Parker 146 acres, Section 13, Rutledge Township, same county.

In Athens County, Carthage Township, the Logan Gas Co.'s No. 3 W. S. & M. Dye farm, Section 18, is reported dry and the Bradford Oil & Gas Co. has started drilling No. 4 D. Dunlavey farm, Section 1. The Ohio Fuel Supply Co. has started drilling an important wildcat well on the L. B. Glazier 92 acres, Section 7, Ames Township. In Rome Township, Edward Sayre's test on the G. W. Hawk 33 acres, Section 14, is a light gas well from the Salt sand and Hughes & Burnes are drilling No. 1 on the M. Hayes 130 acres, Section 13. In Troy Township, D. W. James and others drilled a dry hole in No. 1 on the southwest corner of the Nora Wise 99 acres, Section 26, and W. F. Kempf and others made a location for a test on the John Chambers 28 acres, Section 24.

In Franklin Township, Jackson County, the Ohio Fuel Supply Co., drilled in a nice gas well at a test on the Minnie Stephenson 160-acres, Section 12. In Lick Township, this company has started the drill at No. 1 J. H. Harper 40 acres, Section 26, and No. 1 Mary Emmons 40 acres, Section 35, and is drilling No. 1 Jeff Buckley 70 acres, Section 26.

Largest Gasser

Activity continues in the Mansfield-Shiloh Field in the northern part of Richland County. Weideman and others brought in the largest gas well ever drilled in in northern Richland County when their No. 1 D. Malone, Section 2, Cass Township, came in for 4,000,000 feet at 1,070 feet. This well is about one-half mile northwest of Shiloh and opens up considerable additional territory to drill. Bricker Brothers, drilling on the Noble farm, Section 12, same township, extended the field a considerable distance when their No. 1 came in at better than 1,000,000 feet. Cuppler & Ozier continued drilling their No. 1 Barnes, Section 2, same township, down to the lime and it showed close to 500,000 feet.

The well drilling on the H. O. Downend farm, Section 15, Cass Township, Richland County, by J. H. Harmon and others of Mansfield, has had five showings of gas up to 700 feet. At the shallow depth of 40 feet a gas pocket was struck that completely cleaned the hole, at 100 feet another good showing of gas was encountered at 10 feet in the Berea sand topped at 145 feet and a half million feet was found. This well had 80 feet of Berea sand and it is the belief of a number of operators that a nice Berea sand oil or gas production will be opened up in that vicinity. The well is being carried down to the lime. Two other good gas showings have also been encountered in this well at 450 feet and 635 feet.

G. A. Gettings is starting a well on the J. Willett farm, Section 9, Cass Township, Richland County. Mitchart & Noah are drilling No. 1 on the Charles Burns lot at Shiloh. Ozier and others are starting Nos. 7 and 8 Seeman, Section 1. Davidson and others are starting No. 2 on the Steele-McBride farm, Section 1, Cass Township, and No. 2 on the Hale farm, to the north in Ripley Township, Huron County.

Clyde Kindle of Ashland was badly injured when the mast was pulled in on the drilling machine belonging to Charles Karns, drilling on the Barnes lease in Cass Township, Richland County. Considerable damage was also done to the machine and both the driller and tool-dresser had narrow escapes from serious injuries. Several wells are due for completion in the Shiloh Field and should show quite an extension to the field.

Knox County Wildcat

In Clay Township, Knox County, the Heisey Gas Co.'s No. 2 on the C. C. Green 156 acres, Section 13, and the Rocky River Oil Co.'s No. 1 M. L. & I. M. Rouse farm, Section 8, are small gas wells. The East Ohio Gas Co. has made a location for a wildcat test on the J. W. Lower 80 acres, Section 14, Jefferson Township, same county.

In Medina County, Chatham Township, the East Ohio Gas Co. drilled a dry hole in No. 1 Robert Ritchie farm, Lot 15. In York Township, the Logan Gas Co. drilled a light gas well in No. 1 P. Diehl farm, Section 9, and the Ohio Fuel Gas Co., a dry hole in a second test on the Mary C. Pears 44 acres, Section 44.

Dillon & McFrederick started the drill at their test on the C. H. Speith 65 acres, Lot 30 Grafton Township, Lorain County.

In Wayne County, Wooster Township, Vanover and others started drilling at their No. 1 Charles Lopper 4½ acres, Section 9. In Franklin Township, the Klise-Eckstein-McCann Co. drilled a dry hole in No. 1 William Redette, Section 30. In Wayne Township, the Ohio Fuel Gas Co. has an average gas well at a second attempt on the Mary S. Buckholtz farm, Section 19, and drilling at No. 1 on the C. Bersch 40 acres, Section 16. In Cannan Township, Mayers and others' No. 2 on the J. R. Stuckey 100 acres, Section 2, is a fair gas well, while Bowers and others' No. 1 A. J. Lance 47 acres, Section 2, is a somewhat larger gas producer, but below 1,000,000 feet. The Central Ohio Gas Co. started No. 2 on the H. E. Geyer 33 acres, Section 2.

In Benton Township, Hocking County, the Logan Gas Co.'s No. 2 on the George Amerine 175 acres, Section 22, is showing for about 3 bbls. of oil, but may improve with a shot. The Ohio Fuel Gas Co. drilled a dry hole on the Elias Davis 82 acres, Section 27, and made a location for No. 1 J. L. Mauk 82 acres, Section 12. Same company is drilling No. 1 James A. Friend, Section 27, Perry Township, same county.

In Ripley Township, Holmes County, the East Ohio Gas Co.'s No. 1 Mary A. Martin, Section 14, is a dry hole. In Monroe Township, same county, the Central Ohio Gas Co. has a duster at No. 1 A. W. Fendrick, Section 17, and started drilling No. 1 Jess Powers 60 acres, Section 31. The East Ohio Gas Co. made a location for No. 3 on the J. A. Baker 100 acres, Section 18. In Hardy Township, the Klise-Eckstein-McCann Co.'s No. 1 on the J. R. Findlay 135 acres, Section 7, and its No. 1 on the Jesse P. Close 162 acres, Section 4, were both dry holes. In Washington Township, same county, the Logan Gas Co. got a dry hole in No. 1 H. G. Huffman, Section 33.

Indiana Field

Three completions are reported for the week from the Indiana fields, and the only producer was that drilled by Nicholson and others in No. 4 on the Mackiewain farm, Section 15, Pleasants Township, Grant County. In Sullivan County, Turman Township, the H. & S. Oil & Gas Co. drilled a dry hole in No. 6 Albert A. Poe, Section 12, at a depth of 1,075 feet, and Dugger Paries' No. 1 E. G. Carrothers farm, Section 30, was also dry at 947 feet.

In Penn Township, Jay County, C. P. Willson and others' No. 4 Mary Grimes farm, near Pennville, in Section 22, was a duster. The Keystone Oil & Gas Co. is drilling a second test on the Mary Martin, Section 8. In Wayne Township, same County, the Wellworth Oil Co. abandoned Nos. 1 and 2 C. A. Hanlin, Section 2, and in Bear Creek Township, the Ohio Oil Co. pulled out No. 8 D. Dudgeon, Section 27.

In Nottingham Township, Wells County, O. A. Lockwood abandoned Nos. 1 and 2 George A. Lockwood farm, Section 20, and J. A. Mahan did the same with his No. 1 George Updegraph, Section 31.

In Delaware Township, Delaware County, Green & Green abandoned No. 1 Elias Davis, Section 9, and in Patoka Township, Gibson County, the Ohio Oil Co. pulled out old No. 2 on the Munford heirs farm, Section 2.

Illinois Field

Just over the rise from the Mississippi Valley to the east of the big river, some very interesting territory is noticeable which seems destined to become a prominent oil field. It looks very much as though almost the entire western por-

(Continued on Page 94)

Wyoming Field Operations

By Frank B. Taylor

CASPER, Wyo., Jan. 5.—The Mammoth Oil Co. discovered a sand in its well near the center of Section 33-39-78 below the Wall Creek sands at a depth of 3,116 feet and the sand started making gas and showing oil shortly after the bit passed through the cap.

This well is No. 402 and was formerly reported as a gas well in the second Wall Creek sand, but the Mammoth decided to drill it down and the new sand was cut about 200 feet under the second Wall Creek.

Drilling was stopped at once, but the well is filling up with oil, though shut in; lead lines have been laid and the drilling was resumed.

This sand is not wholly unknown in the Salt Creek area, but this is the first time it has been found on Teapot. The E. T. Williams Oil Co. is reported to have a well producing from this sand on the lease of the firm in the south end of the field but wells drilled below the second Wall Creek sand in the central and northern parts of Salt Creek failed to find the new sand, si it appears to be lenticular.

From the thickness of this sand, as reported in other parts of Salt Creek, it appears to thicken to the south and this would tend to make the Teapot area exceptionally well situated for a productive area over this horizon.

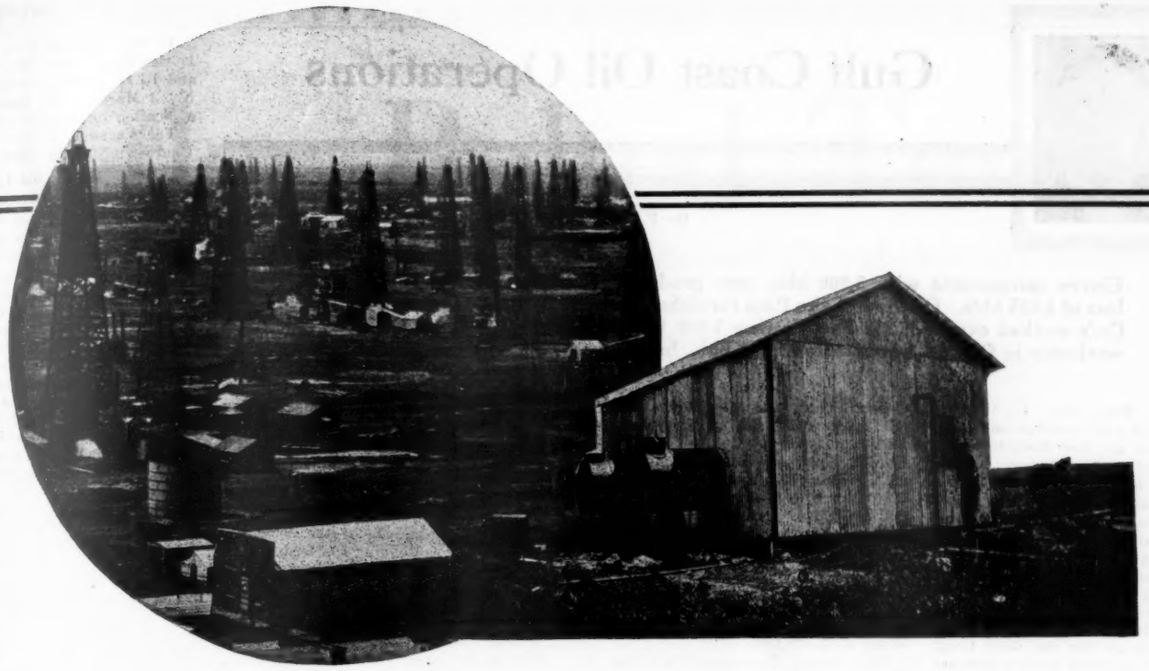
The Mammoth well filled up 2,000 feet with oil, showing a rock pressure around 1,000 pounds per square inch on the sand and this feature is taken to prove that the sand is going to be a big producer in the Teapot area. The sand has been termed the third Wall Creek by some and by others it is claimed that it is the Peay sand of the Big Horn Basin that is found there and which carries oil and gas. It is found above the Bentonite and below the Torchlight sand which latter is the same as the Wall Creek of Salt Creek. It is also above the Mowry shale.

The strike has enlivened the southern part of Salt Creek and Teapot and the well is being scouted by all the oil companies of the district. No large deals have been reported of lands, but several are reported pending.

Salt Creek Drilling Dispute

The Salt Creek Producers Association is reported to be having internal trouble, due to some of the members of the association wanting to drill wells in that field without restraint and to other members wishing to restrain the amount of drilling. It is stated that many of the little fellows have not the capital to carry on an extensive drilling campaign as mapped out by some of the larger members, and still other firms are practically drilled

(Continued on Page 96)



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Gulf Coast Oil Operations

By P. L. McGreal

Eleven completions with 3,900 bbls. new production. Daily average shows loss of 4,835 bbls. Old Sour Lake Pool furnishes best completion. The Texas Co.'s worked over No. 268 Fee, flowing 1,000 bbls. Orange Petroleum Co.'s workover in Orange Pool starts at 500 bbls. but drops to 200-bbl. pumper.

HOUSTON, Tex., Jan. 7.—Weather conditions in the Gulf counties and those to the southwest are now more favorable for development work and more activity is anticipated in all directions. Eleven wells were completed during the week, with 3,900 bbls. new production. Three holes bailed salt water and at the close of the week six tests were bailing.

The estimated daily average gross production for the week is placed at 87,000 bbls. compared with an estimate of 91,835 bbls. for last week, a loss of 4,835 bbls. The estimate for the Gulf Coast alone is placed at 80,678 bbls., a decrease of 4,667 bbls. from the estmate for last week. Luling is placed at 8,910 bbls. and the Callihan district at 1,800 bbls. The latter is on the line of Live Oak and McMullen counties, 80 miles south of San Antonio, where the sand is found between 700 and 800 feet.

The estimate for each district is as follows:

District—	Bbls.
Batson	1,120
Blue Ridge	620
Barber Hill	310
Dayton	75
Damon Mound	1,810
Edgerly (La.)	320
Goose Creek	12,920
Humble	5,500
Hull	17,455
Jennings (La.)	710
Markham	95
Orange	13,400
Pierce Junction	745
Spindletop	860
Saratoga	1,715
Sour Lake	4,750
Somerset and Piedras Pintas	2,660
Vniton (La.)	5,680
Welsh and Anse La Bute	75
West Columbia	13,610
Miscellaneous	3,570
Total	87,000

Sour Lake's Best

The old Sour Lake Pool furnished the best completion of the week, when The Texas Co. worked over No. 268 Fee at 1,865 feet and it came in flowing 1,000 bbls. pipe line oil. The well was finished late in the week. In the Orange Pool, the Orange Petroleum Co.'s No. 5 Winifree, another work over, started flowing 500 bbls. at 3,660 feet early in the week, but at the close of the week it was pumping 200 bbls., showing 5 per cent sediment. The Humble Oil & Refining Co.'s No. 20-B Chesson is bailing at 4,250 feet, as is the Mutual Oil Co.'s No. 6 Chesson at 4,175 feet. Both are old holes that were deepened.

In the Hull Pool, the Houston Production Co.'s No. 7 Taylor bailed salt water at 2,605 feet and will be drilled deeper. The Gulf Production Co.'s No. 5-A Harrison fee is going on the pump at 3,150 feet. The Yount-Lee Oil Co.'s No. 8 Merchant is testing at 2,910 feet. These are on the northwest side of the dome. On the southwest side, The Texas and Vacuum Oil Co.'s No. 1 Hannah, a joint test, is bailing at 2,950 feet. It was drilled to 3,300 feet and made a small well, but was then plugged back to a sand at 2,950 feet. The Republic Production Co.'s No. 26 Dolbear, a worked over hole on the east side, is bailing at 2325 feet.

At Damon Mound the Sinclair Oil & Gas Co.'s No. 20 Jackson is bailing at 3350 feet, showing oil testing 33 Baume, usually high for that section, or the Coastal Pools generally. The Humble Oil & Refining Co. abandoned No. 1 Smith at 3,300 feet. The Texas Co.'s No. 52 Hogg at West Columbia is on air, flowing 750 bbls. of fluid, 25 per cent oil. It is a work over. The Arax Oil Co.'s No. 2 Williamson, another work over, is testing at 2,730 feet.

The Gulf Production Co.'s No. 6 Chapman-Bryan in the Goose Creek Pool was worked over into a 350-bbl. producer at 4,375 feet. The Humble Oil & Refining Co.'s No. 52 Smith is being rigged to pump at 2,510 feet.

The Vinton Petroleum Co.'s No. 12 Rescue in the Vinton (La.) Pool bailed salt water at 2,155 feet and will be deepened.

Drilling Operations

Work in the Orange Pool is now largely confined to deepening old wells in the hope of finding the sand developed by the Sun Oil Co.'s No. 2 Brown, at 4,560 feet, which extended the pool three-fourths of a mile to the southeast in November. The Sun Oil Co. has derricks for Nos. 3 and 4 Brown to the east and west of No. 2 and the Brownie Babbittee Oil Co. is offsetting on the north with No. 1 Brown drilling below 400 feet. The Gulf Production Co.'s No. 5 Pevito to the east is drilling at 2,780 feet and No. 13 Hager fee is below 4,200 feet with No. 14 drilling at 3,890 feet. The Rycade Oil Co. is deepening No. 3-A State land on the banks of Cow Bayou at 4,845 feet. No. 1-C State land is shut down. Piling is being driven on which to build a derrick for No. 1-D State land.

On the north side of the Pool, the Mutual Oil Co.'s No. 8 Chesson is deepening at 4,070 feet. On the northwest side, the Gulf Production Co.'s No. 6-A Kishi-Lang is drilling around 2,870 feet. On the south side, the same company is rigging No. 1 Hammam-Consolidated. In the older section of the pool it is drilling No. 8-A Winifree at 1,235 feet and deepening No. 1-A Winifree below 3,000 feet with No. 4 Chesson drilling at 3,610 feet. The Humble Oil & Refining Co.'s No. 18-B Chesson is drilling deeper below 4,000 feet. Its No. 8 Winifree is deepening below 4,500 feet. The Orange Petroleum Co.'s No. 3 Berwick is deepening at 3,515 feet with a location for No. 7 Chesson. The Supreme Oil Co.'s No. 1 Jackson is fishing at 2,540 feet. The Atlantic Oil Producing Co. is rigging No. 1 Moore to work it over. On the northeast, the Sun Oil Co.'s No. 1 Kato is drilling deeper at 3,918 feet and 1 mile northeast of production, the American National Oil Co.'s No. 1 Winifree is drilling around 3,800 feet. The Pilot Oil Co. is starting No. 1 Aronson, located 1½ miles west of the Pool.

More Rigs in Hull Pool

More rigs are noted in the Hull Pool since the advance of 25 cents in credit balance quotations, the Gulf Production Co. leading in this respect. On the southeast side it is sidetracking No. 9 Phoenix at 1,000 feet and rigging No. 36 Phoenix. No. 4 Thomas fee is deepening. On the north side No. 11 Scarborough is working over and No. 12 Hannah on the northwest side, is drilling around 1,700 feet. The Republic Production Co. is also more active on its 800-acre Dolbear lease on the east side of the dome. It is deepening No. 43 Dolbear at 3,100 feet. New wells are: No. 74 rigging. No. 75 drilling below 2,165 feet and No. 76 below 2,090 feet. Over on the northwest side of the dome, the Monarch Oil & Refining Co.'s No. 2 Miller is drilling around 3,819 feet and No. 3 Miller around 4,220 feet. The Mecom Oil Co. is tubing No. 3 Mecom to try out on the pump at 3,800 feet. The Humble Oil & Refining Co.'s No. 1 Sterling is below 1,885 feet and No. 2 Taylor at 2,345 feet. The Link Oil Co. is working over No. 2 Reviere. The Empire Gas & Fuel Co.'s No. 3 Lynd is rigging. The Yount-Lee Oil Co.'s No. 4 Taylor fee is drilling around 3,300 feet and No. 5 at 940 feet. On the south side, the Sun Oil Co.'s No. 9 Carr is below 2,800 feet.

Goose Creek Pool

In the Goose Creek Pool, Newton & Filcrest's No. 4 Gillette is working over at 1,890 feet. The Humble Oil & Refining Co.'s No. 10 Tabb is drilling at 4,235 feet with Nos. 24 and 26 Galliard Peninsula working over. The Gulf Production Co.'s tests on the Hirsch and Beaumont leases are standing idle. The Gulf Coast and Crown joint No. 31 Galliard is drilling below 2,675 feet.

In the Batson Pool, the Deutser Oil Co.'s No. 1 Hooks is drilling at 940 feet. In the Saratoga Pool, Paggi Bros. Oil Co.'s No. 3 Lewis is below 1,540 feet and the Rio Bravo Oil Co.'s No. 83-B is around 1,720 feet. The Rycade Oil Co.'s No. 2 McFadden, a deep test off the dome at Spindletop, is drilling below 3,922 feet.

On the west side of the Blue Ridge Dome, the Mutual Oil Co.'s No. 1 Weems is drilling below 3,565 feet and The Texas Co.'s No. 11 Robinson is around 2,210 feet. At Pierce Junction, the Humble Oil & Refining Co.'s No. 1 Fitzsimmons is preparing to deepen. The Sun Co.'s No. 1 Ritter on the north side is shut down after casing has been set, waiting for the cement to harden. Same company is rigging No. 1 Whitehead.

At Hockley, a semi-pool in Harris County, The Texas Exploration Co.'s No. 15 Warren is around 2,000 feet in shale showing oil. No. 16 Warren is below 700 feet. At Stratton Ridge in Brazoria County, the Freeport Sulphur Co.'s No. 12 Dannebaum is drilling around 2,020 feet and the Quick Development Co.'s No. 1 Boggs is below 3,800 feet, drilling in rock.

South Louisiana

In the Vinton Pool, the Sun Oil Co.'s No. 2 Johnson is drilling below 765 feet and the Gulf Coast Oil Co.'s No. 7 is working over. The Just Oil & Refining Co.'s No. 2 Lyons is drilling around 2,035 feet. The Gulf Refining Co.'s No. 30 Starr is at 1,865 feet with No. 23 rigging. The Texas Co. is deepening No. 3 Vincent. The Seiss Syndicate's No. 8 Green is starting and the Edgerly Petroleum Co. has a derrick up for No. 2 Vincent. Its No. 1 Tillery is below 3,910 feet. Marrs McLean's No. 5 Gray is sidetracking at 3,300 feet. The Vinton Petroleum Co.'s No. 11 Harmony is drilling at 1,220 feet.

In the Jennings Pool, The Texas Co. is rigging to work over No. 19 Latrille and R. H. Hones is doing the same with No. 3 Martin. The Rycade Oil Co. has a location for another test there.

The Vacuum Oil Co.'s test near Lake Charles is drilling below 1,750 feet.

Luling and Laredo

An average of 150 tank cars per week are being shipped from the Luling Field in Caldwell County to the San Antonio refineries. The Jarmon Oil Co.'s No. 2 Moore, one-half mile southwest of the original wells, is in flowing 400 bbls. by heads at 2,150 feet. The United North and South Oil Co. has started to offset it. The Grayburg Oil Co.'s No. 2 Proctor is drilling near the Moore lease. The M. K. Towns Production Co.'s No. 5 Merriweather is flowing 1,200 bbls. It is on the north side of the lease.

The United North and South Oil Co.'s No. 1 Lopez, which came in last week at 2,170 feet flowing 250 bbls. by heads and extended the producing area 3 miles southwest across the San Marcos River into Guadalupe County, is still holding at about the original output, but is making some water. The United North and South Co., which opened the Luling Field in August, 1922, with its No. 1 Moore, is making locations for six more tests in the neighborhood of the well on the Lopez land. Danciger Bros. of Kansas City, have made locations for three tests. All the major companies have acquired acreage in Guadalupe County, but the Magnolia Petroleum Co. is the only one doing any drilling at present. It is drilling two wells near Kingsbury.

Tank car shipments from the Laredo districts during December total 428 cars, the smallest number shipped out during the year. Those east bound numbered 241 and westbound, via Laredo, 184. The tanks are moved over the Mex-Tex Railroad. The high mark was during June when 628 cars were shipped out, with 604 cars during February. According to the report of the Tex- Mex Pipe Line Co., which has a gathering system in the districts and a line to the railroad at Mirando City, the total runs during the year 1923 aggregated 1,000,000 bbls. The company earned 30 per cent on its capital stock. The districts are slowly recovering from the effects of the recent heavy rains and material is commencing to move to the rigs. The Laurel Oil Co. is drilling two wells in the Mid-Ojulas district and the Shasta Oil Co. has one rig going there. The Cole Petroleum Co.'s No. 1 north of Bruni, is drilling below 3,000 feet with gas from a well at 1,700 feet being used for fuel. The Mirando Oil Co. is drilling a deep test around 3,000 feet in Zapata County.

Jim Hogg County

In Jim Hogg County, the Weber Oil Co.'s No. 3 Holbein is drilling around 3,100 feet. The contract calls for 3,500 feet. S. W. Forrester of Wichita, Kans. has closed a contract for a number of tests to be drilled on part of the Tidal ranch. Mr. Forrester has a lease on approximately 200,000 acres in Webb County, the area being what the Government geological survey terms the Great Western anticline. Mr. Forrester has been at work for three years in perfecting titles and having the territory geologized.

In Kleberg County, the Humble Oil & Refining Co.'s No. 1 Kissman is drilling below 3,000 feet. A gas sand was mudded off around 2,800 feet. The same company is starting No. 2 on the Ebert ranch in Starr County.

In the Callihan district in Live Oak County, Everett and others' No. 1 Shiro is setting a liner and will again test a sand at 860 feet, which shows a lighter gravity oil than does the regular sand around 750 feet. The South Texas Oil Co. is drilling in No. 1 Callihan and rigging No. 1 Brown. W. H. Olcheowski of Houston, is rigging No. 1 Brown. The Coyle-Colcord Oil Co., which has been operating in the Milam County shallow

(Continued on Page 88)

Butler Bolted Tanks

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They were erected for the Jameson Petroleum Co. at Santa Fe Springs, Cal.

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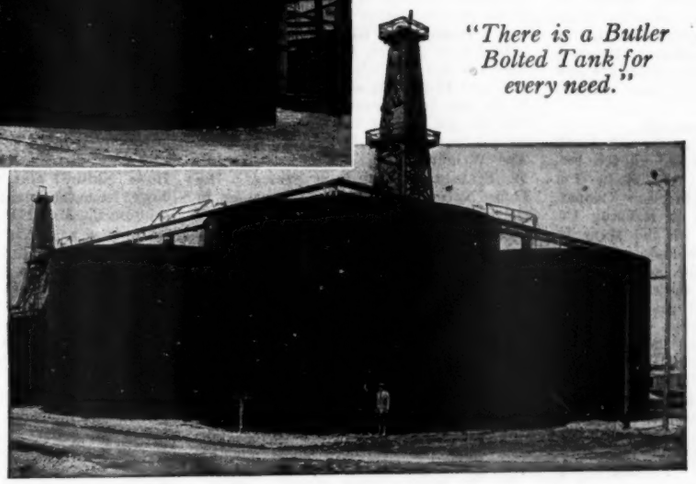

At the right are shown three Butler Bolted Tanks of 5,000-barrel capacity each.

These tanks were erected for the Globe Petroleum Co., at Huntington Beach, Cal.

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Pennsylvania-West Virginia

By D. S. Wakenight

Hope Construction & Refining Co. drills old gas well in Harrison County, West Virginia, to the 30-foot sand and strikes strong flow of gas, flowing 90 bbls. of oil, averaging 23 bbls. for eight days. Room for a pool. Dailey Co. gets 50-bbl. producer in Morgan County, southeastern Ohio.

PITTSBURGH, Pa., Jan. 7.—The outstanding feature is the further advances in the credit balance market. New quotations for crude of the Pennsylvania grades were posted by the Joseph Seep Purchasing Agency this morning when the credit balance market for New York Transit and Bradford National Transit was advanced 15 cents. Corning advanced the same. Oil in the New York Transit Lines and Bradford district oil in the National Transit lines, is quoted at $3.40 and Pennsylvania grade in the National Transit, Southwest Pennsylvania, Eureka and Buckeye lines are now quoted at $3, the highest since July of last year.

Field Developments

The new year started as the old closed, with light pumpers and only a few better than average size. On Stoke Pot Run, Grant district, Harrison County, the Hope Construction & Refining Co. drilled an old gas well on the Mary D. Lynch farm to the 30-foot sand and may possibly have made an important discovery. At 3 feet in the sand the well struck a strong flow of gas and flowed oil, amounting to 90 bbls. the first 24 hours and the first eight days averaged 23 bbls. a day. The oil is light in color and of high gravity. The nearest production to this well is more than 1 mile distant near New Milford, and comes from the Gordon sand. There is room for a pool, but it will take more tests to determine that point. Finding a paying well in the Thirty-foot sand is a new departure for that section.

Gasser in Kanawha County

On Elk River, Big Sandy district, Kanawha County, the United Fuel Gas Co. has completed two fair gassers in the Big Injun sand on the Koontz-Osborne tract. In the same district, the same company has a good gasser on the Stephen Taylor farm. On Buffalo Creek, Carroll district, Lincoln County, the Cambridge Gas & Carbon Co. has a fair gasser in the Berea grit on the Arthur Curry farm. On Rich Creek, Grant district, Wayne County, 2½ miles east of Quaker postoffice, the Columbia Gas & Electric Co. drilled No. 383 on the Guyandotte Land Association property through the Berea grit and dry. On the head waters of Buffalo Run, Grant district, Wetzel County, the Wiser Oil Co. shot in the Gordon sand its second test on the J. McIntyre farm, not good for more than 2 or 3 bbls. a day. On Pharos Run, Grant district, Monongalia County, the Owens Bottle & Machine Co. has a good gasser in the Gantz sand on the French Williams farm. On Indian Creek, Clay district, the Marshall Oil Co. drilled down from the Big Injun to the fifth sand its No. 4 on the D. J. Eddy farm, a very light pumper in the lower formation.

Pumpers, Gassers and Dry Holes

In Central district, Doddridge County, the Hope Construction & Refining Co. has a 4-bbl. pumper in the Big Injun sand at No. 6 on the R. A. Smith farm. In the same district, the Cabin Run Oil Co. completed and shot in the Big Injun sand its test on the E. W. Primm farm. One mile east of production on the Leroy Ingman farm, local parties completed a wildcat on the Bird Smith farm, a fair gasser in the Maxon sand. In New Milton district, G. B. Trainer has a fair gasser in the Big Injun sand at his second test on the A. Draner farm. In the same district, Trainer & Summers have a Big Injun gasser at a second test on the P. Allen farm. Trainer Bros. have the rig completed for a second test on the Frank Kelly farm. In Union district, Pleasants County, White & Rea have a duster on the Luther Elder farm.

Ritchie and Gilmer County

In Union district, Ritchie County, the Star Oil & Gas Co.'s tests on the J. A. Day and Thomas Moses farms are gassers in the Big Injun sand. The South Penn Oil Co. got one of the same kind at a second test on the H. A. Miller farm. The Wright Oil Co.'s No. 4 on the F. M. Stansbury farm is a gasser. The Hope Natural Gas Co. has a gasser in the Big Injun sand on the J. W. Prather farm. In Clay district, Lucas & Maheny have a duster in the Squaw sand on the Daniel Riggs farm. J. B. Yates & Co. had the same kind of luck when they drilled on the Zack Darnell farm through the Big Injun sand. Both have been abandoned.

On Tanners Creek DeKalb district, Gilmer County, the Pittsburgh & West Virginia Gas Co.'s test on the W. V. Gainer farm is a fair gasser in the Big Injun sand. In Center district, the Hope Natural Gas Co. has a gasser on the Ella R. Despard farm. In the same district, Godfrey L. Cabot has a Maxon sand gasser on the A. H. Blackshire farm. The Philadelphia Oil Co. completed a Big Injun sand gasser on the W. V. Gainer farm. In Troy district, the Carnegie Natural Gas Co. is starting a test on the Farnsworth farm. In Liberty district, Marshall County, Clue Bros. & Co. have a Gordon sand gasser on the J. W. Mason farm.

Gassers in Lincoln County

In Duval district, Lincoln County, Rashman & Stanton have a gasser in the Big Injun sand at No. 3 on the H. A. Barrett farm. In Washington district, A. C. Lawrence has a gasser in the same formation at No. 8 on the R. M. Pauley farm. In Courthouse district, Lewis County, H. H. Duncan & Co. have drilled their test on the J. E. McDonald farm through the fifth sand, dry in all sands. In the same district, the South Penn Oil Co. has the rig completed for a test on the Michael Timms farm. On Gillespie Run, Grant district, Ritchie County, Mellon Bros. drilled No. 4 on the A. J. Null farm through the salt sand, a natural producer good for 10 bbls. a day. In Union district, Harrison County, the Hope Natural Gas Co. drilled down to the Benson sand an old well on the B. F. Trash farm. It is a fair gasser. This well was drilled to a total depth of 4,540 feet. In Ten-Mile district, G. L. Cabot has a fifth sand gasser on the M. W. Davis farm. In Church district, Wetzel County, the Manufacturers Light & Heat Co. has a small show of oil in the fifth sand at No. 2 on the J. A. Hixenbaugh farm. In Clay district, the same company's second test on the W. G. Sidwell farm is a gasser in the Big Injun sand. In Liberty district, Marshall County, the Carnegie Natural Gas Co. has drilled its test on the L. E. Conway farm through all sands and dry. In the same district, the Manufacturers Light & Heat Co. has a fifth sand gasser on the Mary E. Courtwright farm.

Drilling and Starting Tests

There is considerable test work for the most part in the old districts. It can not be classed as wildcat operations as it is nearly all in defined territory. On Dudley Fork of Flat Run, Manningtton district, Marion County, West Virginia, the Hope Construction & Refining Co. started to drill on the A. Holbert farm. In Freemans Creek district, Lewis County, the South Penn Oil Co. has a rig completed on the Ivan Kemper farm. In Grant district, Harrison County, the Hope Natural Gas Co. started to drill down from the Big Injun to the Gordon sand on the Mary D. Lynch farm. It was formerly a gasser in the Big Injun. On Elk Creek, Elk district, 8 miles north of Clarksburg, the same company has a rig completed on the Clete Stout farm. In Sardis district, the Hampton Oil Co. is due in the Big Injun on the Isaac Hannah farm. On Cave Run, Lafayette district, Pleasants County, Neeley & Co. are drilling on the Amos Smith farm. In Grant district, B. E. Crippen & Co. started to drill on the Prescott Racer farm. In Jefferson district, J. Klerfield & Co. are drilling on the O. W. Gard farm. In Curtis district, Roane County, the United Fuel Gas Co. is drilling on the Thomas Allen farm.

Gilmer County

In Troy district, Gilmer County, the Carnegie Natural Gas Co. has the rig completed for a test on the Lydia Farnsworth farm. In Center district, McCall & Co. started to drill on the Rosie Wilson farm. In DeKalb district, the Philadelphia Oil Co. is building a rig on the J. Frank Woodford farm. In Center district, the Parkersburg Oil Co. shut down for fuel at 1,825 feet on the Letcher Stout farm. Braxton County is forging to the front with new work. In Otter district, the Star Oil & Gas Co. started to drill on the Frank Waldeck farm. In the same district, the West Virginia Central Gas Co. is drilling on the Perry R. Westfall farm. In Birch district, J. C. Tims & Co. are rigging up on the Susan Baker farm. The Mill Fork Oil & Gas Co. is rigging up on the C. R. Bourne farm. In Union distict, Ritchie County, McCall & Co. are drilling on the E. M. McDonald farm and David French & Co. rigging up on the J. M. Cassidy farm.

Doddridge County

In Grant district, Doddridge County, the Hope Natural Gas Co. is rigging up on the B. F. Freeman farm. In Greenbrier district, Trainer & Travis have the road completed to a location on the A. C. Davis farm. In New Milton district, W. D. Gribble started to drill on the J. P. Burbridge farm. In Clay district, Wetzel County, the Hope Natural Gas Co. started to drill on the Thomas Wade farm and the Carnegie Natural Gas Co. is building a rig on the J. Rufus Long farm. In Geary district, Roane County, the United Fuel Gas Co. is rigging up on the Smith heirs' farm. In Washington district, Calhoun County, the Hope Natural Gas Co. is building a rig on the G. W. Griffin farm. The Euclid Oil & Gas Co. is due in the sand on the Howard Lamb farm. In Sheridan district, L. E. Carroll has a rig completed on the T. C. Cain farm. On Poco Fork, Elk district, Kanawha County, the United Fuel Gas Co. has a rig completed on the Lavernia Harper farm.

Southeastern Ohio

Light pumpers featured the week of development work in the southeastern Ohio fields. In Section 29, York Township, Morgan County, the Dailey Oil Co. got much better than an average well when it drilled its second test on the C. C. Crider farm through the Berea grit, estimated to be good for 50 bbls. a day. This location is in a section that has not been closely tested. In Section 8, Enoch Township, Noble County, Felix Gerst & Co.'s test on the Fred Blake farm is a very light pumper in the Macksburg 500-foot sand. In Hardy Township, Holmes County, the Empire Oil & Gas Co.'s test on the J. W. Findley farm is dry in the Clinton sand. In Section 30, Washington Township, Belmont County, the Bens Fork Oil Co.'s No. 5 on the S. N. Toothman farm is a 10-bbl. pumper in the Berea grit. In Section 14, Wayne Township, W. C. Paine & Co. have a 4-bbl. pumper in the Keener sand on the A. C. Shepard farm. One-half mile south of production on the Jackson farm in Salem Township, Washington County, J. C. Carner & Co. completed a test on the William Holland farm. They found nothing but a light gas pressure in the Berea grit.

Drilling Test Wells

In Section 30, Deerfield Township, Morgan County, Ralston & Maynard started to drill on the John Bankes farm. In Madison Township, Licking County, W. W. and A. T. Wehrle are drilling on the C. R. Fetty farm. In Section 27, Ward Township, Hocking County, the Carbon Hill Oil & Gas Co. started to drill for a Berea grit well on the Peter Rouby farm. In Section 33, the Arkansas Natural Gas Co. completed a light gasser at No. 4 on the Helm Clay Co.'s property. In Section 24, Ward Township, Hocking County, the Sunday Creek Coal Co. has drilled No. 113 through and shot in the Clinton sand, good for 20 bbls. a day. This well was drilled 9 feet into the sand some weeks ago and developed a big gas pressure. The gas blew out and they then drilled it through the sand. In Lot 10, Madison Township, Licking County, W. W. and A. T. Wehrle have a very light pumper in the Berea grit at No. 7 on the C. R. Fetty farm. In Madison Township, Perry County, the Mid-Rock Oil Co. started to drill a test on the Florence Coble farm.

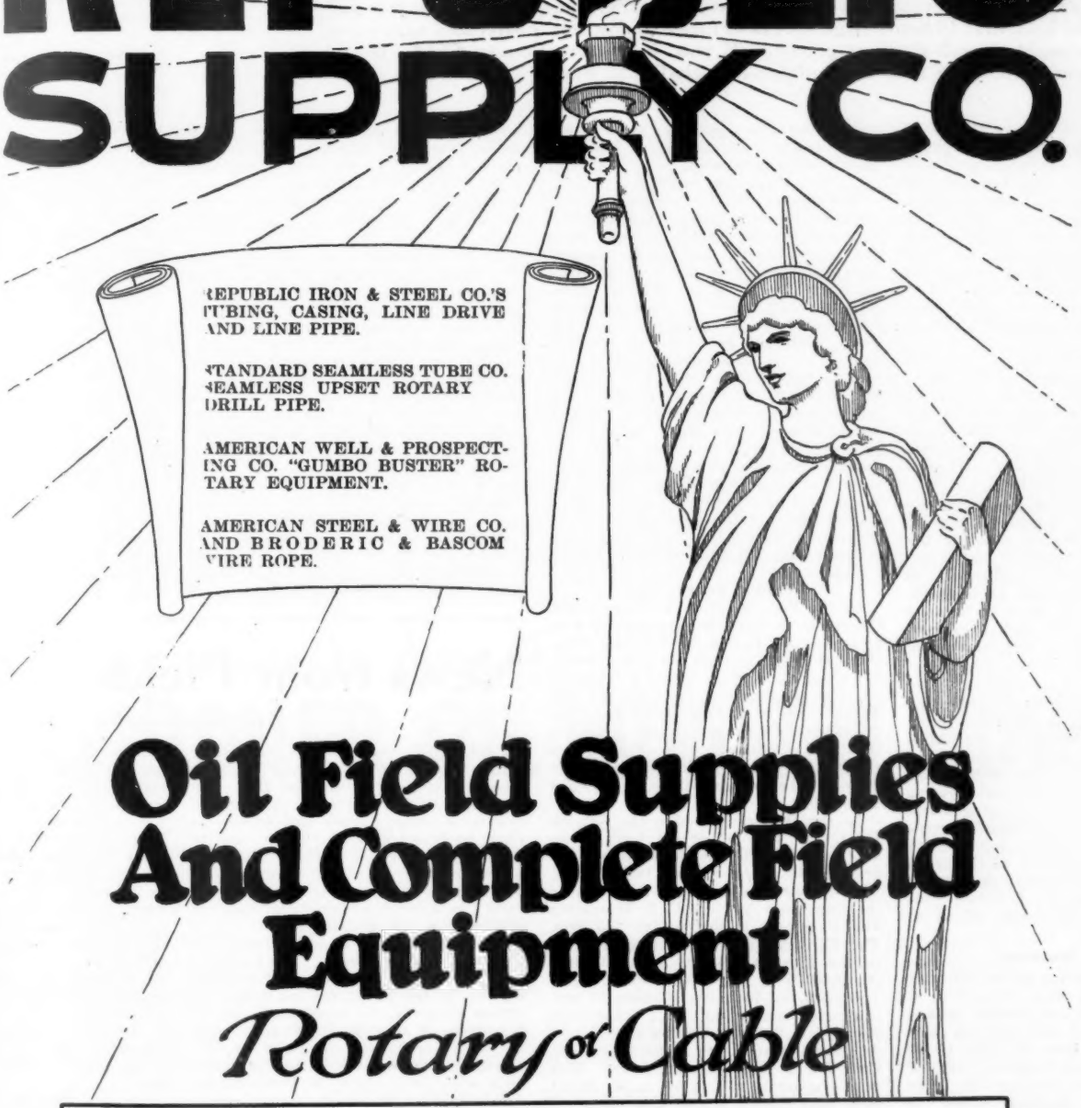
South Pennsylvania

The Manufacturers Light & Heat Co.'s test on the J. W. and N. E. Elkin farm in Aleppo Township, Greene County, is a very light gasser in the fourth sand at a total depth of 3,300 feet. In Springhill Township, the Carnegie Natural Gas Co.'s second test on the Mrs. John Anderson farm is a gasser in the Gordon sand. In the same township, Jud Bell & Co. got a light gasser in the fifth sand at a second test on the M. Moran farm. In Richhill Township, the Greensboro Oil & Gas Co.'s test on the C. N. Hewitt farm is a fair gasser in the Gordon sand. In Wayne Township, the Peerless Oil Co. has drilled a test on the A. J. Whitehill farm through the Bayard sand, the deepest producing formation in Greene County. It is a light gasser.

THE PROBLEM SOLVED

Since it has been claimed that petroleum has its origin in fish, is it any wonder that there are so many shocks in the oil game? And no wonder that so many suckers bite on fake oil stocks.—Inland Oil Index.

REPUBLIC SUPPLY CO.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West Kentucky-Tennessee

By Vern T. Whitney

Leeper Oil Co. completed well in Hancock County, Kentucky, which pumped 107 bbls. first 16 hours from Jett sand found at 480 feet. Foster and associates brought in well rated as good for 25 bbls. in Warren County Field. It extends producing area of Sandidge-Francis-Biddle Pool.

BOWLING GREEN, Ky., Jan. 7.—The recent advances in the price of crude oil have not yet stimulated much activity in the Western Kentucky Field, as the price is still below the point necessary for profitable development. Some rigs are starting up with the idea of getting the wells in at a time when the flush production may be profitably sold, as the western Kentucky operator has often seen prices fade away very rapidly after an intensive drilng campaign has been put on.

There is no field in the country where the operator is so sure of small wells as in western Kentucky and also no place where a firm price structure is so necessary for the operator, who can reckon almost to a barrel what the production of his wells will be after they have been on the pump for six months.

The principal effect of the recent advances has been to cause operators to pump their wells harder. During the past three or four months many leases have been pumped only sufficiently to keep the wells clean, and, as a result, considerable work may have to be done to get individual leases back to normal production, although a rest never does limestone wells any harm.

The Indian Pipe Line Corp. is going steadily ahead with work on its trunk line from Owensboro to Bowling Green and with an extension to the Allen County fields. Two 20,000-bbl. tanks have been erected at the Morgantown station a few miles west of Bowling Green and a two-unit pumping outfit capable of handling 10,000 bbls. of crude per day has been installed and is ready for work upon completion of the trunk line. A radio transmitting installation has also been made to facilitate communication with the home offices at Lawrenceville, Ill.

Line Is Important

At the present writing all but six miles of the 65-mile line from Owensboro to Bowling Green has been hooked up and all but 30 miles of the line has been buried. The line from Bowling Green to Scottsville has been completed and will be in operation by January 15. The trunk line from Bowling Green to Owensboro will be running oil by February 15.

The completion of this system will give the Indian access to the four principal producing sections of western Kentucky, notably Ohio, Hancock, Warren and Allen counties.

An increasing number of producers are taking advantage of the offer of the Indian Refining Co. to cancel existing contracts carrying a 32-cent deduction from the Somerset price and offering to take the oil on western Kentucky classification. The Indian this week posted new prices meeting the advance in Somerset. Their quotations now being $1.46 for oil testing 32 gravity and above, and $1.26 for all oil testing below 32 gravity. The new grades being termed Western Kentucky light and Western Kentucky heavy.

A summary of the week's works shows 11 completions, with a flush of 150 bbls., from 6 producers and 5 dry holes. Compared with the week previous this is a decrease of 3 completions, 2 producers and 1 duster. An increase of 8 bbls. is shown in the production.

Owensboro District

The Leeper Oil Co., drilling on the Amanda Stewart 55-acre farm in Hancock County, has what is believed to be the best producing well in the Owensboro district. This latest completion, which is No. 7 on the Stewart farm, pumped 107½ bbls. the first 16 hours from the Jett sand found at about 480 feet. After the first pumping the well sanded up but when tubing was pulled and the well cleaned out, it was put back on the jack and produced 110 bbls. The other six wells on this property are producing about 75 bbls. daily. It is stated on good authority that this latest producer at the end of 12 months will be making about 40 bbls. daily, if it follows the normal decline of other wells drilled on this farm. The production in the Owensboro district is found in a true sandstone ranging from 10 to 60 feet in thickness.

Drilling Operations

In the Pellville Pool the Newton Oil Co. and C. E. Daugherty are making hole at around 456 feet in No. 7 J. Morrison; Panther Creek Oil Co.'s No. 4 Bob Miler, is waiting for a shot; White & Nicklin's No. 2 O. T. Burdette, adjoining the Bob Miller tract, is drilling at 247 feet; the Pellville Oil Co. is making hole at 78 feet in its No. 2 Brown. No. 1, on this property is pumping 5 bbls. No. 2 Lafe Payne of the Newton Oil Co. is spudding at 150 feet.

In the Hurricane section the Newton Oil Co. is still fishing for tools in its No. 1 Bickett; Randolph & Stevens are drilling No. 1 on the C. Payne farm. This property adjoins the Virgil Miller lease on which No. 3 of C. E. Daugherty and associates is drilling at 435 feet. The Kentucky Oil Co. is moving a rig to the Flowers property and will drill its initial test. The Wood Oil Co.'s No. 1 Griffith, at Reynolds Station, is getting ready to start up. P. T. Thurman's No. 1 Tom Ralph is drilling at 236 feet. At Horse Branch, the Consolidated Oil Co.'s No. 1 Eisler is shut down. This same company's well on the A. W. Miller farm near Olaten is also shut down.

The Petroleum Extraction Co.'s No. 1 Fulkerson, near the town of Elba, in McLean County, is down 789 feet and drilling. In Henderson County, the Pennsylvania-Indian Oil Co.'s No. 1 Graham is shut down on top of the sand.

Warren County

Four completions for the week in the Warren County Field increased the production in this section nearly 35 bbls. The best of the four is No. 1 Wood of Foster and associates of Florida. This well was finished at 550 feet, showing 12 feet of pay and after shot filled up to the extent of 100 feet in an hour's time. It is rated at 25 bbls. flush. The importance of this well is that it extends the producing area of the Sandridge-Francis-Biddle Pool 1½ miles to the south from the Government locks toward the Mel Reeves property of the Martsolf Fuel Products Co. A No. 2 location has been staked 300 feet west of No. 1. Across Barren River from the Wood and Francis farms, Bannon & Stewart completed a 4-bbl. pumper in their No. 4 Anna Shields at 639 feet. Sand was found from 615 to 632 feet. This well extends production 2,000 feet to the west of the famous Sandridge lease of Makeever Bros. and proves a number of locations.

In the northeast extension area, the Plantation Consolidated Oil Co. got a small stripper in its No. 10 W. A. Gott at a total depth of 992 feet. This was an inside location and proved quite a disappointment as the sand was found to be very tight. This company has drilled 10 deep wells on this property which show a production of 45 bbls. daily. No. 11, which was finished in the shallow sand, is pumping 35 bbls. In the Browning district, southwest of Bowling Green, the Jackson Oil Co. got a duster in its No. 4 Jim Jones in the shallow pay at 475 feet.

Drilling Activities

Northeast Extension Area: E. M. Treat & Co.'s No. 17 Sebe Smith, drilling at 956 feet; No. 18 is spudding; Wood River Oil Co. has resumed drilling its C. E. Francis. Evans & Co.'s No. 1 Arch McGinnis, set casing at 450 feet. No. 1 Montague, of Reed and others, is shut down at 90 feet. In the Davenport Pool, the White Oak Fuel Co.'s No. 1 Perkins is drilling at 398 feet; Clark & Jones' No. 2 Hobson is making hole at 900 feet.

Rockfield District: C. L. Tunner has resumed drilling at 502 feet in his No. 1 McLemore; Ruby Consolidated Development Co.'s No. 3 Price-Hall, drilling at 625 feet; Bolling and others' No. 3 Ben Price was drilling at 625 feet; Wiles & Co.'s No. 2 G. Smith, drilling at 123 feet; Pennsylvania Oil Syndicate's No. 6 J. F. Young, drilling at 475 feet; P. H. Lavelle's No. 3 W. R. Hutton drilling at 1,025 feet; Gillespie Oil Co.'s No. 5 Gillespie, spudding at 30 feet; Bob Rehm's No. 1 G. Smith, spudding at 12 feet; Hunt Oil Co.'s No. 13 Bettersworth, spudding at 100 feet; Ray Hogan's No. 1 Poor farm, shut down. In eastern Warren County, Williams and others' have a rig on the Hawthorne farm, near Bay's Fork; Copler's No. 1 Hugh Hill, on top of the sand. New Smith's Grove Kirby and associates are making hole at 324 feet on an unknown farm.

Allen County Wells

Development work in Allen County is very slow and at the present writing only six wells are making hole. Several locations have been made and rigs are moving to them. During the past week only two wells were finished, both of them being dusters. W. R. Wynn's No. 1 T. R. Wilson, dry at 410 feet and Turner & English's No. 8 W. L. Mosley No. 2 farm, dry at 418 feet.

Barren County Completions

In the Coral Hill district, north of Glasgow, in Barren County, Jordan & Dale completed an 8-bbl. pumper in their initial test on the Chitwood farm at 408 feet, 50 feet below the shale. Sand was

(Continued on Page 86)

News from Fields of Canada

By Victor Lauriston

CHATHAM, Ont., Jan. 5.—The chief interest in the Western fields is in the prospects of new drilling for 1924. So far, Imperial Oil, Ltd. has announced no new tests, except for one well which will likely be drilled in the far north, close to the discovery well at Fort Norman. As an alternative to a new well at this point, the discovery well may be deepened. In Alberta, Imperial Oil, Ltd. operations are now at a standstill; but it is generally expected some new work will be started in the spring. The Coalspur area, in the foothills west of Edmonton may be further tested, drilling difficulties having compelled the abandonment of the first test, on Section 3-49-21w-5, before it could reach a conclusive depth. Though the terms of the Imperial agreement with the Grattan Oil Interests, for development of the leases in east central Alberta have been carried out with the completion of two wells, one a gasser and the other a dry hole. A third test in this area may be started in the spring. No definite locations have been made in Alberta, however, by Imperial Oil, Ltd.

Independents Active

The past year saw far greater activity than ever before on the part of independent companies, these operations being concentrated chiefly in the Sweetgrass area of southern Alberta and in the east central field. As a result of the discovery of heavy oil by British-Petroleum, Ltd., the Irma-Wainwright portion of east central Alberta will undoubtedly receive a lot of attention this year. In Sweetgrass district, last year's drilling was a complete failure, so far as production was concerned; but as a matter of fact, owing to lack of funds, few of the tests started there have been carried to sufficient depth to prove conclusively. It is probable three or four outfits will be active in 1924. In Many Island Lake district, northeast of Medicine Hat, four or more outfits will be drilling; while in the new potential oil area further north, midway between Many Island Lake and Wainwright, the Canadian Oil & Refining Co. will put at least one outfit in the field. There will be a few isolated tests in other parts of Alberta, including the unfinished test of the Sanctuary Oil Co. (Thompson) on Section 9-5-8w-4, at Pakowki Lake, which last year got a large gas production and will be deepened for oil. In the south the Canadian Western Natural Gas Co. and in the Viking Field, the Northwestern Utilities, Ltd., will probably do some drilling to maintain their gas supply. In the Okotoks Field, the Royalite Oil Co., an Imperial subsidiary, will continue development work, either deepening some of its present gassers or starting a new test.

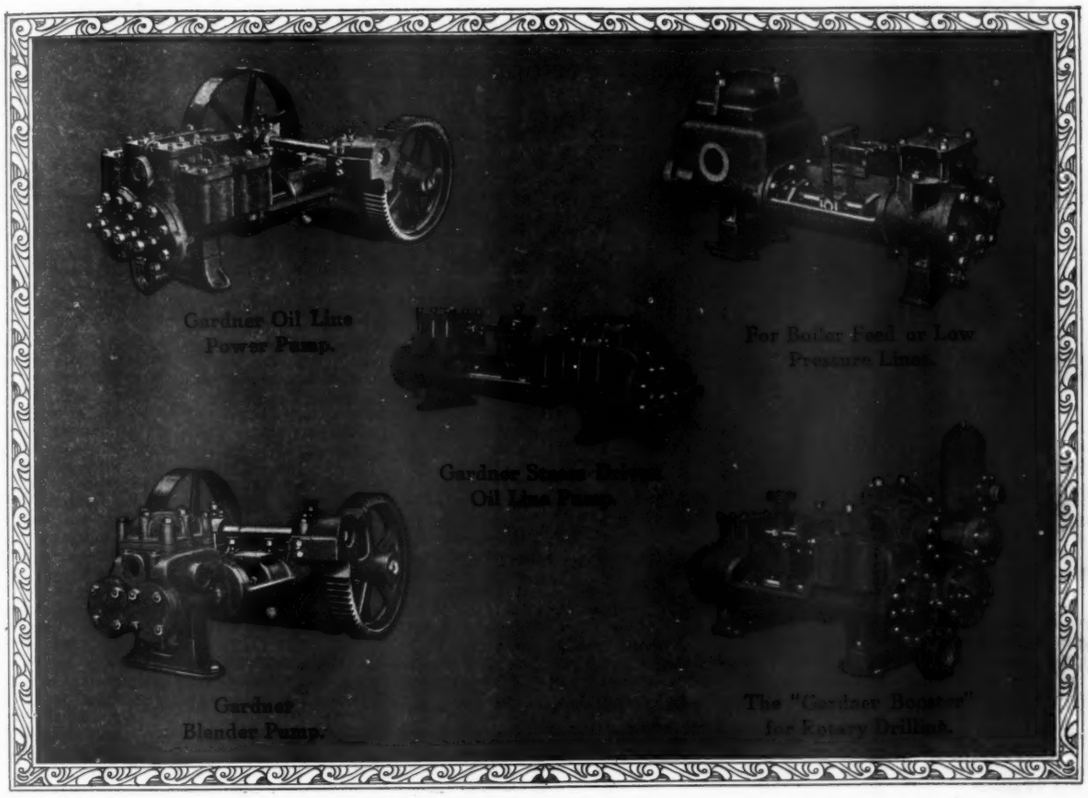
Irma-Wainwright

Analysis of the heavy crude oil from the British Petroleums', Ltd., No. 2 well on Section 36-46-6w-4, in the Irma-Wainwright area, was recently made by J. Fowler of the technical institute at Calgary. The oil has an asphaltic base, and the gasoline and keresone content is small with, however, heavy lubricant values present. The two analyses are as follows:

Oil as received, water, 15.6; gasoline, 5.2; kerosene, 18.2; lubricants, 56.0; residue and losses, 5.0.

Oil with water eliminated: Gasoline, 6.2; kerosene, 21.5; lubricants, 66.3; residue and losses, 6.0.

The new Imperial Oil, Ltd. refinery at Calgary is now in partial operation, and the construction work is practically complete. A permanent staff of 250 men will be carried at the outset. Crude is being brought by tank cars from the Wyoming Field; and the refinery is handling approximately 3,000 barrels a day, and will be running to full capacity by the end of January.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We are pleased to announce that the Gardner line of Oil Industry Pumps will henceforth be distributed to the Industry exclusively by the Continental Supply Company.

We have thoroughly investigated the Gardner line of pumps, both as regards methods of manufacture and performance in actual use, and can endorse these pumps as unsurpassed for the purposes for which they are recommended.

A full line is offered, including Slush Pumps, Pipe Line Pumps, Boiler Feed Pumps, and Blender Pumps. See our nearest store for full particulars.

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We are pleased to announce our new store at Wewoka, Okla.

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CONTINENTAL

Geology of Harpeth River, Tenn., Area

Topography, Stratigraphy and Structure Explained With Account of Previous Developments By State Geologist

By Dr. Willard Rouse Jillson
Director and State Geologist, Kentucky Geological Survey

The area involved in this report is situated 16 miles west of Nashville, Tenn., on the Harpeth River, a northwestward flowing tributary of the Cumberland River. The nearest railroad station is Kingston Springs, a town of about 500 population, on the Nashville, Chattanooga & St. Louis Railroad. The Harpeth River Dome, the principal subject of this discussion, is an elongated uplift located in the central part of this area. The apex of this dome is 2 miles from Kingston Springs, north 30 degrees east, and 1 miles in an air line to the nearest point on the Nashville, Chattanooga & St. Louis Railroad.

The field work upon which this report is based was executed during the last two weeks of August and the first week of September, 1923. Cheatham County is without a base map, and for this reason a somewhat longer period than might otherwise have been necessary was required to prepare an adequate base at a scale of 2,000 feet to the inch. This was done by plane table by S. M. Mayfield under the direction of the writer. The geology was executed in detail by the writer personally, and is accurate as far as vertical elevations are concerned to within a foot. The horizontal control was excellent for the structural map, and this portion of the work is regarded as very accurate.

Topography and Drainage

Geologically the region in which the Harpeth River Dome is located is a part of what is known as the western "Highland Rim" of Tennessee. It is the hill region surrounding the rolling Bluegrass of the Central or Nashville Basin. Geologically it is composed of the limestones, sandstones and shales of the Silurian, Devonian and Mississippian age which rest upon the Ordovician limestones of central Tennessee. The region is rugged. Maximum elevations of 770 feet are obtainable on the ridges of this area. A minimum elevation is found in the Harpeth River just west of "the Narrows." The maximum physical relief is therefore 310 feet, but throughout most of the area the difference between the ridges and the valley floor is from 200 to 250 feet.

The drainage is dendritic or tree-like in form, and the creek valley bottoms are narrow and meandering. The sides of the valley are steep, blanketed with a thin soil. Ledges of rock are frequently exposed. The uplands of the area exhibit the characteristics of an incompletely dissected plateau with the sculpturing by the streams approaching maturity. The region is located so as to center almost over the Harpeth River, the principal minor drainage being that of Hannah's Branch, Dog Creek, Scott Branch, Finch's Hollow, Mound Creek, Fish Trap Hollow, and a portion of the Harpeth River known as the "Narrows." This unique topographic feature was tunneled through on the Montgomery-Bell property for water power purposes years ago, and is now abandoned.

Stratigraphy

The rocks exposed at the surface in the vicinity of the Harpeth River Dome consist of limestones, shales and sandstones of Lower Mississippian, Devonian and Silurian age. The Mississippian rocks are the highest and constitute about 70 per cent of the area involved. They are known as the Fort Payne limestones; a cherry, sileceous and shaly limestone group. They have a maximum thickness in this section of about 300 feet. Directly underlying this series occurs the Devonian formations which consist in descending order of the Chattanooga Black Shale 0-20 feet in thickness, the Hardin sandstones 1 foot in thickness and the Pegram limestones 12 to 15 feet in thickness. Underneath these Devonian sediments occur a group of Silurian limestones which may be grouped under the title "Niagaran." They are approximately 175 feet in thickness, exhibiting only their upper divsions in the regions closely adjoining the Harpeth River. Beneath this group of rocks and unexposed anywhere within the region occur the long series of limestones, shaly limestones, and impure calcareous shales of Ordovican age which have been subdivided into two groups, the Nashville (upper), and the Trenton (lower.) These rocks have an unexplored thickness in this vicinity of upwards of 2,000 feet.

Structure

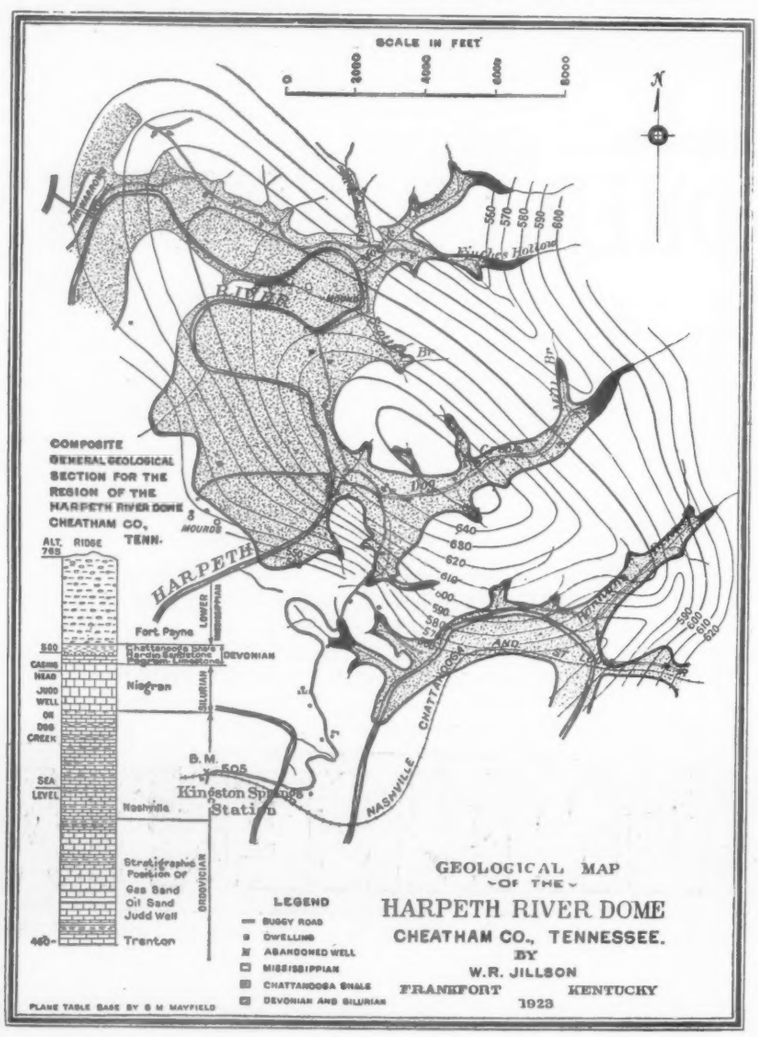
The Harpeth River Dome is an elliptical structure the major axis of which extends in a northwest southeast direction. This axis which is flexed into a flat crescent is approximately north 45 degrees west. The entire structure is about 4 miles in length, and slightly less than 2 miles in width. The dome closes with the highest contour at 650 feet, and the lowest contour of closure at 590 feet, thus exhibiting 60 feet of closure. The width of closure is about 1½ miles, and the length of closure is about 3½ miles.

The high point on the structure is located on Dog Creek, the structure giving an excellent section there with sharp dips to the northeast, and to the southwest. An excellent structural section is also to be observed along the Harpeth River in the bedded rocks within the first 2 miles above Mound Creek. The structure is not apparent but is existent as delineated for the entire region by elevations placed on the contact of the Chattanooga black shale and the Fort Payne formations. In the region surrounding the mouth of Mound Creek and to below "the Narrows" the Chattanooga black shale is absent, and here the section was built up to a normal thickness by adding the thickness of the black shale which would normally have been present.

Previous Development

The Harpeth River Dome has been drilled for oil and gas, one well having been located on Dog Creek. This well was drilled during the winter of 1887 and 1888 by a small group of independent operators who encountered gas at a depth of about 800 feet, and oil at a depth of about 840 feet. The well produced 1,240,000 feet of gas per day, and when the casing was pulled 400 feet of high grade oil was found in the hole, according to the statement of S. S. Gorby, formerly State geologist of Indiana. Mr. Gorby's report concerning the production of this well is borne out by that of residents in the countryside who remember the occurrence of oil and gas in this well. The company being poorly financed was unable to operate the well at a time of depression and slow market. Following the forced abandonment of the property the well was plugged, and its location is now to be noted by the issuance of sulphur water from the Silurian limestones as a spring on the farm of J. H. Judd on the north side of Dog Creek.

This historical occurrence of oil and gas on the Harpeth River Dome is interesting since it indicates that either or both of these fuels may be secured by intelligent prospecting on this structure. The occurrence of both oil and gas in the Judd well verifies their anti-clinal position in this part of Highland Rim generally, and on this structure in particular. It is reasonable to assume that oil and gas may be expected at similar depths in other and probably better locations on this structure though the black Chattanooga shale (Devonian) is removed by erosion. Both oil and gas have been found in a number of old shallow wells in Dickson County, which adjoins Cheatham on the west and southwest.



Oil Sands

An inquiry into the subsurface stratigraphy of the Dog Creek region reveals the fact that gas and oil secured at the respective depths of 800 and 840 feet below the surface on the J. H. Judd farm came undoubtedly from porous strata in the well known Trenton group (Ordovician age.) No accurate log of the old Judd well was kept at the time of the drilling, and none is now available. These Trenton rocks, here found to be productive, are the source of much commercial oil and gas in northeastern Ohio, southern Kentucky and Tennessee. They are the rocks which are exposed in the central Bluegrass regions of Kentucky and Tennessee. The producing horizons here on Dog Creek may be similar to those which are now producing so largely in the Cumberland and Monroe County Fields of Kentucky and the adjoining Clay County Field of Tennessee in the Cumberland River Valley.

Conclusions

A summary consideration of the geology and known occurrence of oil and gas in this region leads to the conclusion that further prospecting for oil and gas on the Harpeth River Dome is worth while. Producing "sands" should be encountered at normally shallow depths of 850 to 930 feet, depending upon the location. Locations made in the bottoms high on

(Continued on Page 70)

FACTS ABOUT THE TRET-O-LITE PROCESS

The TRET-O-LITE process for reclaiming pipe line oil from crude oil emulsions, commonly called cut oil and tank bottoms, is the most thorough, convenient, and economical process in use. It is the most widely used process.

Fresh cut oil is being treated at a cost of ½ cent to 2½ cents per barrel of recovered oil. Tank bottoms average 6 cents per barrel of oil recovered.

This process may be adapted to any lease condition, and any **quantity** of oil can be treated with the **minimum of equipment** and labor.

The accumulation of Tank Bottoms can be **prevented** with TRET-O-LITE, by installing a Tret-O-Lizer on the flow line to the tanks.

The largest treating plant in the world is a TRET-O-LITE plant with a capacity of 25,000 barrels of pipe line oil per day.

No quantity of oil is too large and none too small to treat profitably.

There is no loss of gravity when the TRET-O-LITE process is used.

Regular oil field equipment only is used in TRET-O-LITE plants.

In most fields the oil is treated at the well temperature.

Some of the largest oil companies install TRET-O-LITE plants before the wells are drilled in, and carry a stock of TRET-O-LITE in their warehouses.

It is economy to keep a few drums of TRET-O-LITE on every lease. It does not spoil if kept for long periods.

Hundreds of millions of dollars worth of oil have been recovered by its use.

It has saved many valuable oil wells from total loss.

It has saved many small producers from financial ruin.

It has saved more oil for the large producers than any invention of recent years.

It has saved whole fields from loss.

We maintain experts in the principal fields who give the producer the benefit of their knowledge as TRET-O-LITE engineers.

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An Oil Company's Stock of Tret-O-Lite

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MEN KNOWN IN OILDOM

Alexander Deussen

Alexander Deussen, recently elected a director of the American Petroleum Institute, representing the American Association of Petroleum Geologists, of which organization he was formerly president, was born in San Antonio, Texas, in 1882. He was educated at the University of Texas, receiving his degree in 1904. From 1905 to 1915, he was employed by the University of Texas, and from 1907 to 1915 by the United States Geological Survey as assistant geologist. During 1916, he acted as geologist for the Gulf Production Company. From 1917 to date he has maintained a consulting practice at Houston, Texas.

With the development of the Gulf Coast fields, Mr. Deussen gradually became interested in production and organization problems, acquiring production of his own in the meantime, and since 1915 he has been influential in all Gulf Coast development. He has made notable contribution to establishing the offside production at Humble, the discovery of New Iberia (Louisiana) Dome, and to the development of Goose Creek, Blue Ridge, Pierce Junction, South Dayton and Hockley. He has the distinction also of having first suspected and published a description of the true relation of faulting to oil and gas accumulation in fields of the important type of Powell and Mexia in Central Texas. He was largely responsible for the organization of the Invincible Oil Company in 1918. He is today retained in a consulting capacity by several important Gulf Coast oil companies in addition to his work for his own interests.

Mr. Deussen is a fellow in the Geological Society of America.

PERSONAL PARAGRAPHS

J. S. Blair of the Kasoming Oil Company, Casper, Wyo., visited the main offices of the company at Cheyenne last week.

* * *

Warren Gray, well known supply man, went down to Houston, Tex., from Shreveport, La., with Mrs. Gray for the holidays.

* * *

C. F. Urschel, who has charge of the oil properties of T. B. Slick, noted operator, spent one day last week in Seminole County.

* * *

C. S. Clifton, an independent operator of Okmulgee, Okla., was seriously injured last week when his car went into a ditch.

J. C. Lindsay and C. L. Ferguson of the Marine Oil Company, left Casper Wyo., last week for a conference at the Denver offices of the company.

* * *

Ray Hurley, of the land department of the Ohio Oil Company, with offices in Casper, Wyo., spent the holidays at the home of his mother in Buffalo, N. Y.

* * *

M. C. Crouch, representative of the Frick-Reid Supply Company in Casper, Wyo., has returned to his office from a trip to Sidney, Neb., and Cheyenne, Wyo.

* * *

W. B. Williams, assistant superintendent of the southern terminals of The Texas Company, has returned to the Houston offices from an inspection trip.

* * *

E. P. Campbell, deputy supervisor of the United States Bureau of Mines, with Denver headquarters, paid the Casper office of the bureau a visit last week.

* * *

L. H. Van Dell, representative of the Eastern Torpedo Company at Duncan, Okla., was married on New Year's Eve to Miss Mollie McCommos, of Duncan.

* * *

F. O. Young, of Denver, Colo., sales manager of the National Tube Company, spent last week in Casper, Wyo., calling on the trade and investigating business conditions.

* * *

E. W. Sinclair, president of the Sinclair Consolidated Oil Corporation, and Mrs. Sinclair, have returned to New York after a brief visit in Tulsa, their former home.

* * *

M. B. Sell, efficiency expert of the Phillips Petroleum Company, of Tulsa, gave a talk on efficiency before the Bartlesville, Okla., Business Men's Association one day last week.

* * *

John M. Carson, president, and A. F. Hickey, vice president of the Taxman Refining Company, Chicago, are planning to spend several days recuperating at Excelsior Springs, Mo.

* * *

Thomas G. Laney, a pioneer producer and manufacturer of supplies, now located at Independence, Kans., will spend the winter months on the Gulf of Mexico in the vicinity of Galveston, Tex.

* * *

F. L. Butz, of the Keystone Oil & Marketing Division of the Central Commercial Company, Chicago, is again at his desk after spending the holidays with his parents at Grand Tower, Ill.

* * *

John S. Griffin, director of the Pennok Oil Company and the Skelly Oil Company and several others, and who is interested in oil properties all over the United States, left Tulsa for New York last week.

* * *

A. Baker, head of the land department of the Ohio Oil Company, Casper, Wyo., and Mrs. Baker, spent the holidays with their son, Harold A. Baker, who is a student at the University of Wyoming.

* * *

Herbert E. Williams, valuation engineer for the Comar Oil Company, with offices in the Kennedy Building, Tulsa, spent the holidays in Oklahoma City, then left for Washington, D. C., on business.

* * *

L. L. Stephens, attorney of Pierre, S. D., and commander of the South Dakota division of the American Legion, has accepted the position of general attorney of the Standard Oil Company of Indiana.

* * *

John Huegel, formerly with the Union Petroleum Company and more recently with the Sinclair Refining Company, in Chicago, has left that concern and has organized the Huegel-Nugent Petroleum Company, with offices in Chicago.

* * *

E. J. Sullivan, president of the Central Pipe Line Company has returned to Casper, Wyo., from an extended visit in California, where he went some time ago in search of health. He is now much improved and able to resume his executive duties.

G. W. Hanley of Fort Worth, Tex., who has been connected with the land and lease department of the Gulf Production Company for the past six years, has been transferred to the Wichita Falls office and will be placed in charge of the company's operations in that territory.

* * *

E. A. Bacon, formerly with the Gulf Refining Company, at Shreveport, La., has succeeded R. B. McCormick as chief scout for the Roxana Petroleum Corporation, with headquarters in Tulsa. Mr. McCormick is now general utility man for the company, and in his new capacity has just returned from a business trip to Decatur, Ill.

* * *

A. C. Bean, president of the Tnemec Paint & Oil Company, of Kansas City, Mo., (formerly Armor Oil & Chemical Company) spent his tenth successive Christmas season in Tulsa. For those who have difficulty in pronouncing the name of the company, it will be easier to reverse it and say "Cement," for cement paint is the company's specialty.

* * *

J. C. Sperr, of Lander, Okla., had both hands badly frozen in a peculiar manner last week. He was attempting to connect a tank car loaded with gasoline, with a lead line to a storage tank and suddenly the gasoline started to flow out of the car. Mr. Sperr stayed with it and tried to complete the connection until the cold liquid fairly froze his hands.

* * *

Alfred C. Bierman, geologist and engineer, of Dallas, Tex., announces the establishment of offices for conducting geological investigations, preparation of valuations and determination of depletion and depreciation allowances for income tax purposes, and making appraisals for financing and commercial purposes. He is associated with Clarence B. Osborne, of Los Angeles, Cal.

* * *

F. E. Kistler, of the Producers & Refiners Corporation, Chicago, has returned from a business visit to Denver, Colo., and his brother, W. L. Kistler, of the same organization, is again in his Chicago office after a short business trip to Tulsa. H. E. Johnston, sales manager of the Producers & Refiners Corporation, has returned to the office of the company after spending the holiday season in Salt Lake City, Utah.

* * *

R. L. Eckerty, who has been manager of the Wichita Falls, Tex., office of the Gulf Production Company for the past year, has resigned his position and will devote his time after the first of the year to operating independently. Mr. Eckerty will deal in Wichita and Archer County lands exclusively. He has been with the Gulf company since March 25, 1918, all of the time having been located at Wichita Falls, Tex.

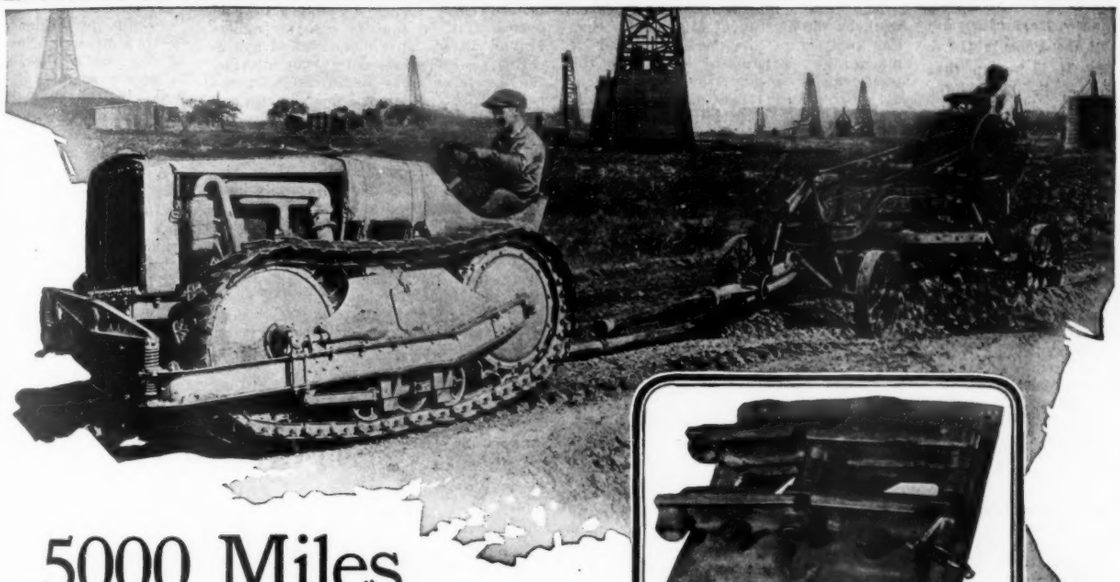
* * *

R. V. Hanrahan, vice president and general manager of the Humble Pipe Line Company, with Houston headquarters, went north for the holidays, accompanied by his family. Mr. Hanrahan has been through a strenuous experience, due to the big production developed by the Humble Oil & Refining Company in the Powell Field. The pipe line broke all previous records by handling 120,000 barrels in one day during the height of the production.

* * *

Herbert Hussey of Petrolia, Ont., who has been working in Port Maitland, will leave this week for the Venezuela fields. Clifford Hackett and James Dean of Petrolia, Ont., have left for the Peruvian fields and James Miller will leave on receipt of passports. John Eaglesham and Sam Brown of Petrolia have left via New York to drill in Ecuador. Robert Nevler, with the Imperial Oil, Ltd., office at Calgary, Alta., for six years past, has left for Talara, Peru, where he will be junior accountant for the International Petroleum Company. Newton Harvey and Cecil B. Swick have left Canada for the Peruvian fields. Clyde E. Moore, stillman at the International refinery at Talara, has returned to Peru after a vacation in the United States. E. LaToure of the Imperial Oil, Ltd., geological department, at Toronto, has left for Colombia. Fred Huntley, superintendent engineer of the marine department of the International Petroleum Company in Colombia, has returned with Mrs. Huntley to Toronto.

The Bear Tractor



5000 Miles with Practically No Wear on Tracks

THE section of track shown in the insert of illustration above is part of complete track on display at Chicago Road Show. It was repossessed by the Bear company for display purposes from one of the big oil companies in the southwest, being taken off tractor No. 10002 after more than 5000 miles of work. The pen knife blade, inserted as far as possible between track pin and link bearing, shows how imperceptible the wear has been. With a micrometer, it is measured in the merest thousandths.

The scarcely discernible wear shown on the track links is the only wear apparent after millions of contacts with the sprocket teeth. And as to how long a Bear track shoe will wear—no one knows. No Bear track shoe has ever worn out.

Bear is establishing new records of economy and owner satisfaction. A. V. Stombaugh, Farnam, Nebraska, says: "I have driven the Bear Tractor nearly 5000 miles. * * It is very easy to drive. * * Tractor is in fine condition. The repairs have been so small they are almost nothing to speak of. I have a daily record showing running the Bear 60 days on average of 26 gal. of gas and 3 qts. of cylinder oil per day at grading and maintaining."

BEAR TRACTORS INC. 5323 PARK PLACE NEW YORK CITY

The Tractor that Delivers its Power to the Drawbar

NATURAL GAS DEVELOPMENTS

Natural Gas Field Found in Roumania Says British Report

A recent development of the petroleum industry in Roumania appears of considerable importance to the Phoenix Oil & Transport Co., Ltd. It is known that the Romano-Americana, in drilling for oil in the Aricesti Field, struck a large flow of gas above the oil level on November 24. It is their intention to go down to the oil; but the gas strike, the London Oil News says, is a further confirmation of the existence there of huge natural gas deposits, especially in view of the fact that the gas from the Steaua Romana well continues unabated in quantity after a considerable length of time. This gas replaces or saves several hundred tons of fuel oil per day, the yield being sufficient to supply the whole of the company's refinery works, blacksmiths' shops, and field requirements.

The Phoenix has approximately 6,000 acres in this area, and a part of this land actually lies between the two wells mentioned. The company has also two pipe lines constructed by the Roumanian Consolidated Oilfields, Ltd., when this latter concern was about to develop the gas deposits; and these lines connect the area with the town of Ploesti, in which town the Phoenix holds an exclusive concession for supplying gas direct to the consumer. It is presumed that the Phoenix will at once resume the drilling work which was begun on this field by the Roumanian Consolidated Oilfields, much of whose plant is on the ground. As the gas occurs at a comparatively shallow depth it should not take long to reach; and the surface position is such that, barring accidents, there is a practical certainty that the Phoenix will soon have available a large gas production from this area.

It may be taken for granted that the company will first of all utilize the gas for their field operations at present dependent on liquid fuel, and also for their refineries. A great deal of gas from oil well drilling is already utilized in the field work of Phoenix; but the quantity which would be available from the Aricesti Field should enable the company to avoid the use of liquid fuel almost altogether. As there would appear to be a superabundance of gas above its own requirements, the company would be able to supply the surplus to other refineries and works in the neighborhood of Ploesti, which probably consumes 500 tons of oil per day; and beyond this there would be the supply to the town itself. The possession of the two pipe lines provides ready made facilities for these purposes. There is, indeed, providing the supply of gas is what many good judges think it will be, no reason why the line should not be extended for 60 kilometres between Ploesti and Bucharest.

Advices from Roumania state that the Phoenix has at present some 60 oil wells drilling, and is drilling a total of some 2,000 metres per month. By the law of averages from past experience in Roumania it is fair to expect that some of these will prove gushers.

DEATH OF F. E. WATKINS

WAURIKA, Okla., Jan. 5.—Fred E. Watkins, vice president and general manager of the Iowa Oil & Refining Co. and one of the principal land owners of southern Oklahoma, died recently at his home here at the age of 64.

GASEOUS CONTENT OF GROUND WATER AID TO OIL AND GAS PROSPECTOR

By G. W. Jones, W. P. Yant and E. P. Buxton
Pittsburgh Experiment Station, United States Bureau of Mines

The data obtained in recent research work by the Bureau of Mines show that the analysis of the gases dissolved in underground waters may be used by the prospector or geologist as an additional aid in discovering new oil or gas fields. The hydrocarbons present in the water serve to indicate whether oil or gas sands exist in the region through which the waters have passed. A portable field apparatus has been developed by the bureau which can be used for removing and analyzing the gases dissolved in the waters. This apparatus and the method of use are described in this paper. Results are given of analysis made on waters from various localities, and the significance of these waters with reference to the detection of oil and gas.

Any liquid, with the exception of mercury, if permitted to come in contact with gases or vapors, will absorb a definite amount thereof. This action depends on the following factors: (1) The kind of gas; (2) the percentage composition of the gases in contact with the liquid; (3) the pressure of the gas; and (4) the composition and temperature of the liquid. For our present purpose it is only necessary to consider two of these factors—namely, the gas or vapor (natural gas and light petroleum vapor), and the liquid (water.)

If water of underground origin traverses a gas or oil sand it will absorb a definite quantity of hydrocarbon vapors, and will carry these vapors to the surface when topped by a well. When the water is exposed to air at the surface, the gases and vapors will be given off and their place taken by oxygen and nitrogen from the air. Therefore, an analysis of the gases in waters reaching the surface from an underground source should be of value in determining whether these waters have traversed or come in contact with hydrocarbon-bearing strata. With the apparatus herein described it is possible to determine whether the vapors are mainly of natural gas composition (methane CH_4) and ethane (C_2H_6), or are composed mostly of heavier petroleum vapors (ethane, propane (C_3H_8), and butane (C_4H_{10}).

The writers realize from the tests which have been made that the application of water analysis will be of little value for certain regions—for example, in the Pennsylvania fields where there are many producing sands. Samples of water of deep origin from this region nearly always show on analysis high percentages of hydrocarbon vapors due to many gas and oil sands present. For newly prospected regions, analysis of the gases in the underground waters should be decidedly helpful provided that the source of the water is known, and means are available for obtaining waters of deep origin. This suggests the value of testing the water in a well as drilling progresses, and as an aid in determining whether it is advisable to drill deeper in quest of oil or gas sands. The geologist should thus be aided in his predictions as to what newly prospected regions are most likely to be productive of petroleum or natural gas.

Decomposing carbonaceous material protected from the air (oxygen) produces marsh gas or methane. This is a common occurrence around swampy marshes and lakes. In some places the gases rise to the surface in fairly large quantities. Gases of this character usually carry large percentages of carbon dioxide, so that in case an underground water shows quantities of hydrocarbons, also considered carbon dioxide, the conclusion may be drawn that the gases are of recent origin and not present in sufficient quantities to warrant drilling. Also, waters that have come in contact with coal or oil-shale will absorb hydrocarbon gases from them, and may lead to erroneous conclusions. These suggestions are offered merely to show how the analysis of gases in underground waters may be applied to prospecting. The analyses that have been made show that the apparatus can be used in the field for such work. However, the interpretation of the results will require much practical field work, coupled with actual results before its utility can be proved.

Commission's Power To Be Tested Before U. S. Supreme Court

TOPEKA, Kans., Jan. 7.—A test of the power of the Kansas State Public Utilities Commission to regulate rates of the Kansas Natural Gas Co., the largest natural gas producing corporation in the State is scheduled to be made before the United States supreme court in Washington. The case is one of many which have gone through the Kansas courts in the last few years, involving gas rates. Originally it was a controversy over the "city gate" rate.

The State utilities commission granted the Kansas Natural a 5-cent increase in the charge for its product to the 40 distributing companies in as many cities and towns in Kansas. The increase was contested by numerous distributing companies and city goverments, but was upheld by the supreme court.

The State supreme court also upheld the right of the State utilities commission in its rate making supervision over the Kansas Natural. The latter contends that because of the inter-state business it transacts, the State commission should not have such jurisdiction. The company's business, mainly in Kansas, extends into Oklahoma and Missouri.

Another point in the Washington argumet will be the right of the Kansas Natural to collect several hundred thousand dollars it claims is due from the local or distributing companies. This sum represents the difference between collections under the 35-cent "city gate" rate and what they would have been under the 40 cent rate between the time the company applied for the 40 cent rate and the time the higher rate finally was sustained by the State supreme court. Under the decision of the State court the Kansas Natural is not entitled to make this collection.

Fred S. Jackson, counsel for the State commission, represents it in the Washington arguments. The gas company is represented by attorneys from Bartlesville, where its main offices are located.

The Kansas Natural was in receivership when the 40-cent rate was instituted nearly two years ago. It now is controlled by the Henry Doherty interests.

Survey Is Ordered By Government of Amarillo Gas Field

OKLAHOMA CITY, Okla., Jan. 5.—C. R. Bopp, an engineer of the United States Bureau of Mines, has been ordered by the Bartlesville office of the Bureau to secure samples of gas from several wells in the Amarillo district of the Texas Panhandle that the Bureau may ascertain what percentage of helium, if any, the gas contains.

A survey of the Amarillo gas territory was made in 1920 by Yancey C. McDaniel, who after the war for a time was assistant gas engineer at the Government helium plant at Fort Worth. He is reported to have found one well then making 107,000,000 feet of gas showed considerable helium and that another making 80,000,000 feet contained 2½ per cent of helium. At that time only a little gas was being used and that for domestic purposes, and the Government is said to have concluded that helium development could not be carried on there until a market had been secured for the large percentage of gas that would have to be released after the helium was extracted.

The Bopp survey is said to have been occasioned both by insistence of gas producers of the Texas Panhandle and the program of some members of congress to either provide for the early use of some of this gas or purchase outright a block of land producing that of highest helium percentage to be held back for development when the Government can do it profitably.

One smelter at Amarillo is now using gas from that field and it is probable that during the year several other industrial plants will be located there.

SOUTH TEXAS HOPES GAS WILL LAST LONG

That gas producing areas of South Texas are believed to have a long life is indicated in a program of expansion that has been announced by the Southwestern Gas & Electric Co., which serves Beaumont, Texarkana, Shreveport, Biloxi and Gulf Port.

While Marshall T. Walker, vice president and manager of the Beaumont division, has not indicated the figure that may be expended in other places, he has announced that $200,000 will be expended at Beaumont for plant improvements and the laying of new mains, and that during the next few years new territory will be covered.

KANSAS UTILITIES CASES

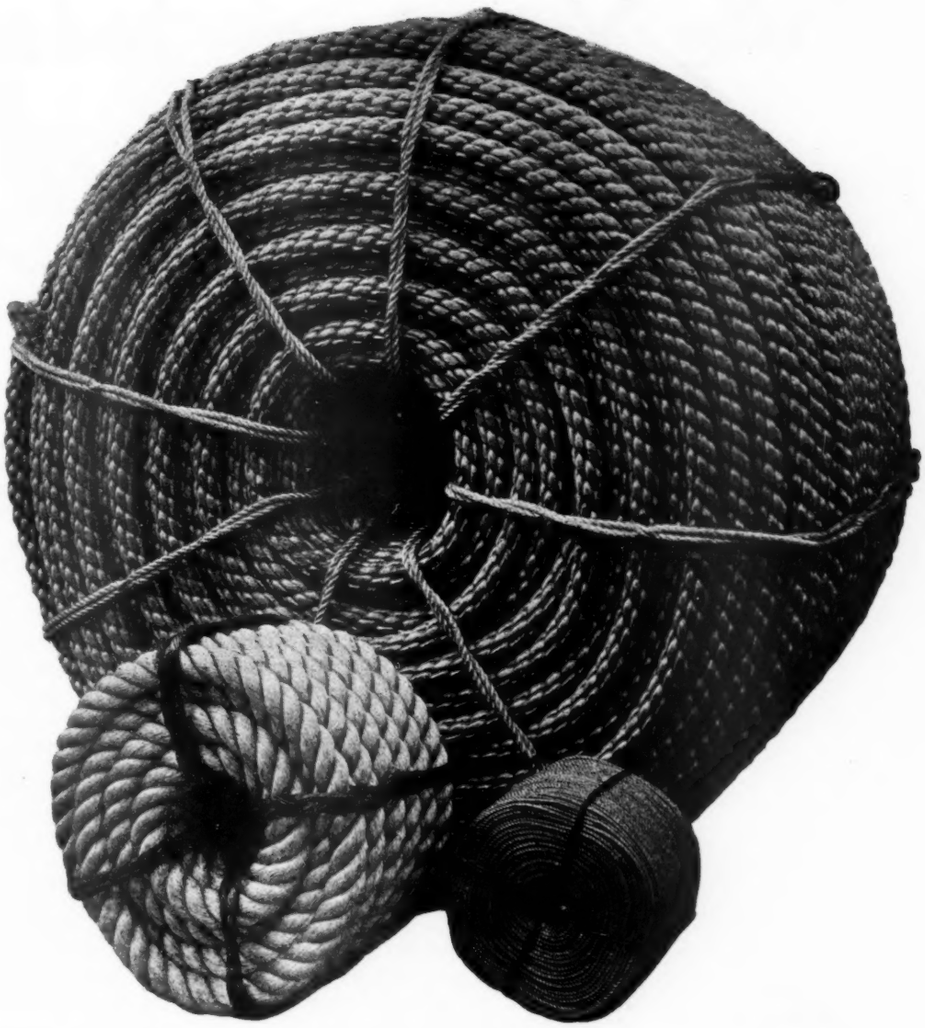
TOPEKA, Kans., Jan. 7.—The Kansas Public Utilities Commission has announced three gas rate hearings for late in January and early in February.

The first hearing will be in Kansas City, Kans., January 28, and the next will be in Atchison the following day. The other hearing will be in Wellsville and Edgerton February 12.

The hearings involve the proposed 3-part rate ordered established in these cities.

Considerable opposition to the plan has developed in many cities and among some of the distributing companies. The pipe line companies are favorable to the 3-part rate as the plan was developed by H. L. Doherty, head of the pipe line companies operating in this section of the State.

NEW BEDFORD CORDAGE



New Bedford Drilling Cable, Bull Rope and Torpedo Line

MANUFACTURED BY

NEW BEDFORD CORDAGE CO.

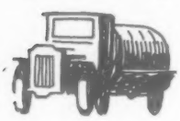
ESTABLISHED 1842

General Offices: 120 BROADWAY, NEW YORK CITY

Mills: NEW BEDFORD, MASS.

The Yesterday Today and Tomorrow of

yesterday



today

Henry L. Doherty "started something" when he advocated the intensive cultivation of domestic fuel oil markets as a means of stabilizing and expanding the oil industry, in his address before the National Petroleum Association at Atlantic City, September 20th and more recently at the American Petroleum Institute. His recommendations have been enthusiastically endorsed and taken up by various branches of the oil and allied industries. Fuel Oil has become an intensly "live" subject.

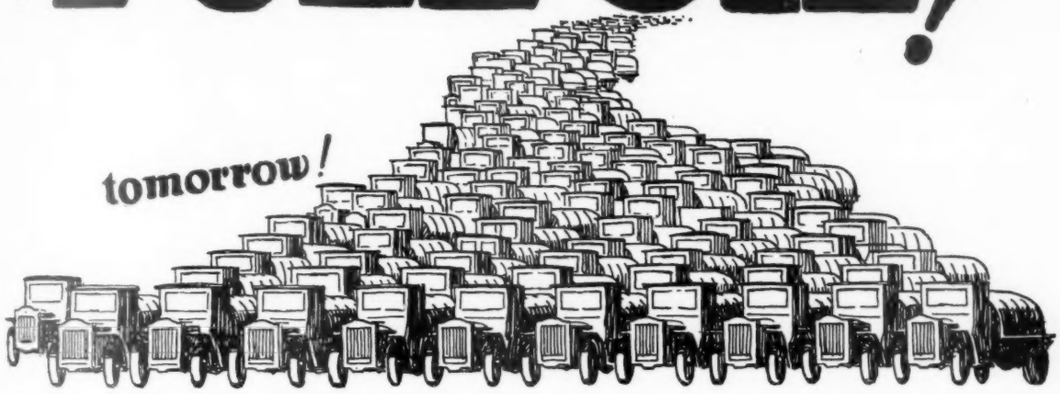
What will all this Fuel Oil development mean to the oil jobbers? It will mean the opportunity of a lifetime, as live oil jobbers will profit from the big majority of this growth. Knowing that a man with ambition likes to feel that "the sky is the limit" to what he can accomplish if he'll just work for it, we are here pointing out a few comparative figures as to what Fuel Oil holds out to the oil jobber.

CITIES SERVICE OILS
EMPIRE

Figuring only 2½ barrels of Fuel Oil for each ton of domestically consumed coal in the United States, gives a potential

EMPIRE FUEL OILS

FUEL OIL!



market for over TEN BILLION (10,000,000,000) gallons of Fuel Oil or distillates annually. This is a BIG figure—one that may not be fully attained for many years, if ever—but let's cut it IN HALF to be conservative. Then we'll have a possible market for over FIVE BILLION (5,000,000,000) gallons annually.

Certainly that is a goal worth working for with all our might! It represents about the same annual consumption in GALLONS as the annual consumption of GASOLINE in this country. You get about the same margin of profit per gallon. Therefore it means a possible EXTRA PROFIT for the oil jobbers of this country of over ONE HUNDRED AND TWENTY FIVE MILLION DOLLARS ($125,000,000.00).

A nice slice of this extra business can be developed in YOUR territory—by YOU. Why not start now? We can give you some valuable suggestions that will help you get the business. You are invited to write us.

CITIES SERVICE OILS
EMPIRE

EMPIRE REFINERIES INC.

SUBSIDIARY CITIES SERVICE CO.

CHICAGO 208 S. LaSalle St. — GENERAL SALES OFFICES-TULSA, OKLA. — NEW YORK 60 Wall St.

ST. LOUIS 1913 Title Guaranty Bldg. | ST. PAUL 345 Hamm Bldg. | FT. WORTH W. T. Waggoner Bldg. | KANSAS CITY 705 Commerce Bldg. | NEW ORLEANS 1107 Carondelet Bldg. | ATLANTA 226 Hurt Bldg. | CLEVELAND c/o Cities Service Oil Co. | PHILADELPHIA c/o Crew Levick Co

EQUIPMENT AND SUPPLIES

NEW UNDERREAMER IS ADDED GUIBERSON LINE

A new underreamer, invented and patented by G. A. Montgomery, after years of personal field experience in building and repairing underreamers, has been tried out thoroughly for a year and has now been announced as a addition to the line of oil field specialties manufactured by the Guiberson Corp., of Dallas, Tex.

An exceptional degree of strength is claimed for the new underreamer. Cutters are large, thick and sturdy, with exceptionally wide cutting edges, and each cutter seats in three separate places, over 60 per cent of the cross-sectional area of the body being bearing surface for the cutters.

The cutters are fitted into the head in such a way that the remaining blow places no strain on the mandrel, spring or bolt. The entire strain is on the metal in the cutters and body, which can withstand the heaviest duty. The mandrel is forged of chrome vanadium steel, greatly reducing the danger of breakage and loss of the internal parts in the hole.

A patented adjunct in connection with the new Guiberson underreamer is a special dressing form which permits the operator to dress the cutters accurately to gauge with a minimum of time and labor.

TACHOMETERS SUBJECT OF BRISTOL BULLETIN

A bulletin on recording and indicating tachometers has been published by the Bristol Co., of Waterbury, Conn., and is ready for distribution. It is the company's bulletin No. 317, containing 32 pages, and is punched for insertions in a loose-leaf binder.

The Bristol's tachometers include both recording and indicating models for permanent installation. The recording tachometer provides reliable measurement and complete record for speed which is automatically traced on a paper chart. These records show actual speeds as they take place, and are valuable for both engineering data and production studies.

Two types of tachometer equipment are described in the bulletin, the pneumatic and the electric. A feature of the Bristol instruments that is mentioned is the long distance flexible connection that permits the tachometer to be mounted on the wall or switchboard where it may be observed by the attendant at a convenient distance from the revolving parts.

The pneumatic instruments are made only in the recording models, with round charts either 12 inches or 8 inches in diameter, and the records traced by the ink method, according to the bulletin.

NEW FACTORY BRANCHES

Direct factory branches and warehouses have been established in San Francisco and in Los Angeles by the Chain Belt Co. of Milwaukee, Wis., manufacturers of Rex chains, transmission machinery and conveying equipment. The San Francisco office is located at 82 Natoma Street, with G. E. Taylor in charge as district manager. The Los Angeles branch is located at 210 South San Pedro Street, with J. V. McDonald as district manager.

With these two direct factory branches, and the establishing just recently of similar branches and warehouse stocks in Spokane, Seattle and Portland, the Chain Belt Co. is in a position to assure complete service on products of its manufacture to the Pacific Coast trade.

BETTER TREND FOR OPERATIONS IN STEEL INDUSTRY DURING JANUARY

By B. E. V. Luty

PITTSBURGH, Pa., Jan. 7.—In the matter of steel production generally, the trend is for heavier mill operations this month than in December, when there was the lowest operating rate of the year 1923. Even at that, however, December was not a poor month for steel mill operations, seeing that the mills then ran at three-fourths of the highest rate they had ever attained, that having been last April, and at 15 per cent above their average rate in the four post-war years, 1919 to 1922 inclusive.

Part of the increase in steel mill activity this month is due to many buyers having placed orders in December with the particular stipulation that shipment should be deferred until after January 1, so as to keep the material out of the annual inventory, and since most steel products are shipped as produced the production against such orders was deferred.

For the broader comparison, however, it seems that there is a decidedly freer buying tendency, among practically all classes of steel consumers, than has existed in the past two or three months. This is attributable to a combination of influences, foremost among which are two: (1) The very mild weather up to January 1, whereby there was little of the usual seasonal decrease in steel consumption; (2) The generally improved business outlook. While at no time recently has there been anything discernibly wrong with business and commercial conditions, there was an element of hesitancy, which is being dispelled by observation that despite conservative sentiment for months the United States is doing "business as usual."

In instilling confidence in the minds of steel buyers the steadiness of steel prices is an important factor. The few little weak spots in the steel market have been disappearing, particularly the shading in black sheets, galvanized sheets and automobile sheets. A few weeks ago this shading was widespread, involving probably more than half the tonnage being sold. Now, while the shading has not absolutely disappeared it has become inconsequential, involving but a small proportion of the sales. Probably the sheet market is rarely without any shading. The sellers, such as the Steel Corporation, which have adhered to full prices right along, are having entirely satisfactory business.

In freight car buying an interesting and important item is the closing by the Southern Pacific of orders for 6,550 cars, leaving 3,000 refrigerator cars still to be placed out of the road's long pending inquiries for about 10,000 cars. With this important business placed, the average rate of freight car buying since December 1 may be considered entirely satisfactory, more than sufficient to continue freight car building at the high rate that obtained during the year 1923. Moderate sized car orders are expected to come in from week to week, without any great burst of buying.

Prospects for pipe mill operations in the new year are excellent. A few butt weld furnaces were closed over the holidays, for repairs, and these are now resuming. Many lap weld furnaces have been closed recently, and these are not resuming so freely, but the trend is expected to be continuously upward.

The demand for merchant pipe, particularly in butt weld sizes, is insistent and continuous. Jobbers' stocks are low and require replenishing, while the mills are bare of stocks and would like to build up stocks.

In oil country goods, apart from line pipe, the pipe mills already see an increase in buying by jobbers, presaging a gradual increase in activity as spring is approached. The pipe mills are informed that new drilling projects are being formed expect demand for tubing and casing in 1924 to exceed, not merely equal, the very good tonnage of production there was in 1923. As to line pipe, it would be difficult for the 1924 tonnage to equal that of 1923, which was a particularly heavy year. The Sinclair pipe line order, for instance, was the largest in tonnage in the whole history of the pipe industry.

Prices of merchant pipe and oil country goods are firmly maintained on the basis of the lists of last April.

In tin plate the leading interest continues to operate practically full, while independents, operating nearly full in the past couple of months, are slightly increasing their operations. It is considered beyond question that tin plate requirements this year will fully equal productive capacity and tin plate may be hard to buy in April.

No buying of oil storage tanks is reported.

BUYS FLOATING ROOF TANKS

The Navy Department of the United States Government recently purchased nine 36-foot Wiggins Floating Roofs from the Chicago Bridge & Iron Works, to be installed on gasoline tanks in Honolulu.

Officials of the Navy Department have been deeply impressed with the possibilities of the Wiggins Floating Roof for reducing losses in stored oils due to evaporation, a commander of the Navy having been among the 50 oil men and others invited to witness a test of the roof last summer. At that time, with the roof actually floating on gasoline, gasoline was poured on top of the roof and ignited. Neither this test nor any of the others caused any damage to the tank or its contents.

Mr. Wiggins, prior to his association with the Chicago Bridge & Iron Works, was an engineer with the United States Bureau of Mines, and conducted practically all of the investigations made by that bureau relating to the determination of evaporation losses and means for their reduction and elimination.

LUFKIN RULE CATALOG

The eleventh general catalog of the Lufkin Rule Co., of Saginaw, Mich., has just come off the press and is being distributed to the trade. It contains 166 pages, with alphabetical and numerical indexes, and shows the completeness of the Lufkin line of measuring devices.

The Lufkin Rule Co. is one of the pioneers in the business, having been established more than 40 years ago. Its goods are sold in all markets the world over, and the company is prepared to mark its tapes, rules, etc., in the regular measurements of all countries.

The manufacture of fine mechanical tools, in the small tools division, is the company's latest development, and is fully described in the new catalog.

LOW FREIGHTING COST CLAIMED FOR TRACTOR

Lower cost for freighting in the oil fields is one of the advantages claimed for Bear tractors, given in a pamphlet recently distributed by the company. Dependable power, combined with speed and great ability to go through all kinds of roads, or to go where there are no roads, makes the Bear an ideal oil field tractor, according to this article, and is winning the favor of oil producers.

"Its three speeds meet the needs for light, fast work, or for slower, heavier work," to quote further. "Likewise, its flexibility, due to its oscillating bar and compensating track rollers, as well as its elasticity of power, due to its easily shifted speeds and engine reserve, give the Bear remarkable adaptability to the great variety of work and conditions found in the oil fields. Its 6-foot turning radius, and its ability to get out of tight places, are features of particular importance to all production men throughout the oil industry."

The same bulletin contains a photographic reproduction of a section of track shoe from a Bear tractor that had worked continuously for 1,666 hours, covering more than 5,000 miles of travel. During this time, approximately 3,000,000 contacts with sprocket teeth had not worn the links enough to be noticeable. A pen knife, inserted as far as it would go between the track pin and link bearing shows that the wear during this long service to be inconsequential. The steel track shoe is one of the special features of the Bear tractor.

INTERESTING DATA NOW GIVEN ON LEFAX SHEETS

A novel method of distributing engineering data on its heat insulating products has been instituted by the Celite Products Co., of Chicago. For the convenience of heat engineers and others who may use the information, the company has reproduced many blueprints and charts in Lefax size sheets, punched and ready for insertion in standard Lefax loose-end binders.

These include charts showing comparative conductivities of Sil-O-Cel brick, red brick and refractories, as well as heat losses through various wall constructions, insulated and uninsulated. Drawings are also included showing methods of insulating such equipment as boilers, furnaces, ovens, brick, lime and cement kilns, gas equipment, glass equipment, oil stills, etc.

These Lefax sheets are not intended to replace the company's regular literature and standard size blueprints but will supplement them. The number of requests already received for the new form indicates the popularity of the reference feature.

TO SPECIALIZE ON LEAD

A. L. Rizan, representative of the Hoyt Metal Co., of St. Louis, announces that he will now specialize on crawlers' sheet lead, extending his territory to the principal cities of the East. C. M. Heilmuth will replace him in his work with the mixed metals in the Mid-Continent Field.

COMPANY DISPLAYS PRODUCTS

The Oil Conservation Engineering Co. has on display in its new office in New York a complete line of cut-open sections and samples of Oceco equipment. The company's new location is in the Cunard Building, 25 Broadway.

"My Bank" for Oil Field Service

Says the Mid-Continent Oil Operator

Out in the far reaches of Jack Oak and Sand Hill, the Vanguard of the oil industry pushes its field forces. A discovery well has changed a sleepy valley into a seething center of activity. Men and mules; trucks and tractors; casing and cable are rushed into the fray. Fortunes are at stake. Leases are bought and sold over a pine box. Money is the motive force—it talks the language of the oil fields. In a majority of cases the Mid-Continent Oil Operator's line of communication runs back to the financial headquarters of the oil fields. What is true of the field force is true of every phase of the industry. This is why most of the Mid-Continent operators refer to the Exchange National as "My Bank."

"My Bank" for Oil Field Advice

Says the Eastern Financier or Shipper

In the polished interior of a sumptuous office, sits an official of a Pittsburgh steel mill. A telegram on his desk from a western producer asks quotations for a hundred thousand dollars worth of casing for shipment by fast freight. The steel mill needs the order, yet the producer is unknown to the mill. Is the producer good for the payment for so large an order? Instantly summoning stenographer: messenger boy ready for a mad dash; the wire is dispatched to the Credit Department of the Exchange Banks of Tulsa. Within an hour, the information requested will be on the Steel Mill President's desk; for the Mid-Continent Sales department of the Mill is a depositor of the Exchange Banks of Tulsa and its service is instantly available to all depositors who ship to or finance the oil industry.

DIRECTORATE

E. W. Sinclair, W. A. Brownlee, J. A. Chapman, J. H. Evans, Frank Haskell, A. T. Allison, H. H. Rogers, J. A. Hull, H. G. Barnard, R. P. Brewer, Jno. Y. Murry, R. M. McFarlin, H. F. Sinclair, J. J. McGraw, J. H. Markham, Jr., J. J. Larkin, D. H. Kelsey

EXCHANGE BANKS OF TULSA

The Exchange National Bank — Exchange Trust Company

Combined Resources Exceed Forty Million Dollars—

Natural Gas Statistics For the Year of 1922

In 1922 there was consumed in the United States 762,546,000,000 feet of natural gas, having an estimated value of $84,873,000 at the wells, and of $221,535,000 at points of consumption, according to data compiled by H. Backus and issued by the Department of the Interior through the Geological Survey. This is 15 per cent more than the quantity consumed in 1921 and 4 per cent less than that consumed in the record year, 1920.

Increased production is recorded for most of the States and in the leading five —West Virginia, Oklahoma, Pennsylvania, Louisiana and California—gains were made, ranging between 8 and 20 billion feet. There were few changes in rank of the States in production, with the exceptions that Wyoming, with an increased output of more than 50 per cent, attained eighth place, passing Kansas; and that Arkansas, with an increase of more than 100 per cent, went from twelfth to tenth place, passing Kentucky and New York. But in consumption several of the leading States changed relative positions as compared with 1921. Pennsylvania regained first place, having dropped to third in 1921, Ohio changed from first to second, Oklahoma from second to third, California from fifth to fourth, and West Virginia from fourth to fifth.

The interstate movement of natural gas increased from 150 billion feet in 1921, to 179 billion feet in 1922. West Virginia, which contributed 25 per cent of the total production and consumed only 10 per cent, contributed 66 per cent of the gas that was transported to other States.

During the past few years there has been a considerable increase in the unit value of natural gas, the average value at the points of consumption increasing from 21.6 cents per M feet in 1919 to 29.1 cents in 1922. The average value per M feet of the gas used in domestic consumption increased more than 15 cents in the past four years and in 1922 was 49.9 cents.

CONSUMPTION OF NATURAL GAS IN 1922

	Domestic			
			Value at Points of Consumption	
State—	Number of Consumers	Quantity (M cu. ft.)	Total	Aver. per M cu. ft. (Cents)
Arkansas	32,100	4,423,000	$1,637,000	37.0
California	428,960	12,802,000	10,056,000	78.6
Colorado	7	4,000	560	14.0
Illinois	8,900	286,000	140,840	49.3
Indiana	39,120	1,767,000	1,075,800	60.9
Iowa	3	500	250	50.0
Kansas	128,580	11,518,000	7,166,000	62.2
Kentucky	111,595	9,649,000	3,984,000	41.3
Louisiana	26,070	3,383,000	1,006,000	29.7
Maryland	11,045	568,000	399,000	70.3
Michigan	9	700	350	50.0
Missouri	85,600	4,639,600	3,732,000	80.4
Montana	1,230	148,000	79,600	53.8
New York	174,070	15,115,000	7,422,000	49.1
North Dakota	3	600	300	50.0
Ohio	984,300	84,176,000	41,966,000	49.9
Oklahoma	136,600	17,403,000	7,558,000	43.4
Pennsylvania	534,100	54,984,000	27,066,000	49.2
South Dakota	365	10,200	5,100	50.0
Tennessee	3	400	200	50.0
Texas	157,530	11,231,000	6,946,000	61.8
West Virginia	146,430	20,742,000	6,114,000	29.5
Wyoming	7,980	1,462,000	547,000	37.4
1922	3,014,600	254,413,000	$126,902,000	49.9
1921	2,630,915	248,334,000	$110,337,000	44.4

SUMMARY OF STATISTICS OF NATURAL GAS, 1919-1922

Quantity of natural gas consumed, (M cu. ft.):	1919	1920	1921	1922
Domestic consumption	255,743,000	286,001,000	248,334,000	254,413,000
Industrial consumption:				
Carbon black	49,896,000	40,599,000	50,565,000	53,629,000
Field use	169,787,000	202,108,000	182,305,000	197,850,000
Other industrial	270,490,000	269,502,000	180,848,000	256,654,000
Total	745,916,000	798,210,000	662,052,000	762,546,000
Domestic	34.3%	35.8%	37.5%	33.4%
Industrial	65.7%	64.2%	62.5%	66.6%
Domestic consumers (approx.)	2,501,000	2,615,000	2,631,000	3,014,600
Average value per M cu. ft.				$84,873,000
Value of natural gas at points of consumption	$160,888,000	$196,194,000	$174,617,000	$221,535,000
For domestic purposes	88,414,000	109,302,000	110,337,000	126,902,000
For industrial purposes	72,474,000	86,892,000	64,280,000	94,633,000
Average value per M cu. ft.:				
For domestic purposes	34.6c	38.2c	44.4c	49.9c
For industrial purposes	14.8c	17.0c	15.5c	19.0c
Domestic and industrial	21.6c	24.6c	28.4c	29.1c
By-products of natural gas:				
Natural gas gasoline:				
Quantity (gallons)	351,500,000	384,700,000	449,900,000	506,833,000
Value at plants	$64,197,000	$71,788,000	$61,815,000	$72,711,000
Average value per gallon	18.3c	18.7c	13.7c	14.4c
Carbon black:				
Quantity (pounds)	52,100,000	51,300,000	59,800,000	67,736,000
Value at plants	$3,816,000	$4,032,000	$5,446,000	$6,850,000
Average value per pound	7.3c	7.9c	9.1c	10.1c

INTERSTATE TRANSPORTATION OF NATURAL GAS IN 1922

State in Which Gas Was Produced	State in Which Gas Was Transported	Quantity (M cu. ft.)
Indiana	Kentucky	4,000
Kansas	Missouri	4,327,000
	Oklahoma	434,000
	Total	4,761,000
Louisiana	Arkansas	6,151,000
	Texas	5,240,000
	Total	11,391,000
New York	Pennsylvania	10,000
Ohio	Indiana	3,230,000
	West Virginia	1,324,000
	Total	4,554,000
Oklahoma	Arkansas	2,000,000
	Kansas	12,811,000
	Missouri	544,000
	Texas	14,817,000
	Total	30,172,000
Pennsylvania	New York	8,540,000
	Ohio	77,000
	West Virginia	1,910,000
	Total	10,530,000
Texas	Louisiana	4,011,000
West Virginia	Kentucky	3,232,000
	Maryland	704,000
	Ohio	68,126,000
	Pennsylvania	40,360,000
	Total	112,424,000
	Grand total	179,333,000

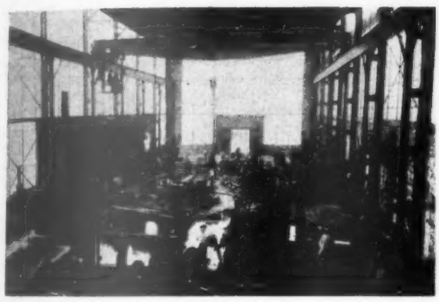
INDUSTRIAL

	Field (drilling, pumping and operating gasoline plants).				Carbon Black			Other Industrial			Total Industrial		
State—	Number of Consumers	Quantity (M cu. ft.)	Value at points of consumption. Total	Aver. per M cu ft. (cents)	Quantity (M cu. ft.)	Value at points of consumption. Total	Aver. per M cu. ft. (cents)	Quantity (M cu. ft.)	Value at points of consumption. Total	Aver. per M cu. ft. (cents)	Quantity (M cu. ft.)	Value at points of consumption. Total	Aver. per M cu. ft. (cents)
Arkansas	310	5,343,000	$ 352,000	6.6	.....	$.....	...	8,060,000	$1,317,000	16.3	13,403,000	$1,669,000	12.5
California	1,200	47,655,000	3,515,000	7.4	.....	.....	...	24,123,000	4,326,000	17.9	71,778,000	7,841,000	10.9
Colorado	....	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Illinois	45	3,067,000	277,000	9.0	.....	.....	...	30,000	6,200	20.7	3,097,000	283,200	9.1
Indiana	320	85,000	20,000	23.5	.....	.....	...	1,411,000	545,200	38.6	1,496,000	565,200	37.8
Iowa	....	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Kansas	200	3,801,000	653,000	17.2	.....	.....	...	13,029,000	2,496,000	19.2	16,830,000	3,149,000	18.7
Kentucky	47	535,000	101,000	18.9	2,300,000	92,000	04.0	2,784,000	707,000	25.4	5,619,000	908,000	16.2
Louisiana	735	18,429,000	1,718,000	09.3	38,004,000	760,000	02.0	6,171,000	992,000	16.1	62,604,000	3,470,000	05.5
Maryland	30	.....	.....	...	.....	.....	...	137,000	73,000	53.3	137,000	73,000	53.3
Michigan	....	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Missouri	75	.....	.....	...	.....	.....	...	234,000	70,000	29.9	234,000	70,000	29.9
Montana	5	15,000	2,000	13.3	322,000	6,500	02.0	1,000	200	20.0	338,000	6,700	02.0
New York	330	262,000	38,000	14.5	.....	.....	...	400,000	216,000	54.0	662,000	254,000	38.4
North Dakota	....	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Ohio	3,325	2,880,000	936,000	32.5	.....	.....	...	29,071,000	12,160,000	41.8	31,951,000	12,096,000	37.9
Oklahoma	2,150	56,208,000	11,768,000	20.9	520,000	21,000	04.0	37,550,000	5,454,000	14.5	94,278,000	17,243,000	18.3
Pennsylvania	4,590	4,900,000	1,183,000	24.1	16,000	1,300	08.1	70,833,000	22,407,700	31.6	75,749,000	23,591,000	31.1
South Dakota	1	.....	.....	...	.....	.....	...	5,400	1,300	24.1	5,400	1,300	24.1
Tennessee	2	.....	.....	...	.....	.....	...	2,600	600	23.1	2,600	600	23.1
Texas	1,590	36,288,000	5,003,000	13.8	.....	.....	...	12,500,000	2,216,000	17.7	48,788,000	7,219,000	14.8
West Virginia	2,185	8,867,000	1,497,000	16.9	12,087,000	1,039,700	08.6	38,242,000	10,178,300	26.6	59,196,000	12,715,000	21.5
Wyoming	80	9,515,000	382,000	04.0	280,000	13,000	03.4	12,070,000	2,089,000	17.3	21,965,000	2,484,000	11.3
1922	17,260	197,850,000	27,444,000	13.9	53,629,000	1,933,500	03.6	256,654,000	65,255,500	25.4	508,133,000	94,632,000	18.6
1921	20,989	182,305,000	21,649,000	11.9	50,565,000	2,073,000	04.1	180,848,000	40,558,000	22.4	413,718,000	64,280,000	15.5

NATURAL GAS IN 1922

Natural Gas Produced and Consumed in the United States in 1922

	Produced and delivered to consumers including deliveries in other States			Consumed, including receipts from other States			Interstate transportation
		Estimated value at wells			Value at points of consump.		
State—	Quantity (M cu. ft.)	Total	Av. per M cu. ft. (cts.)	Quantity (M cu. ft.)	Total	Av. per M cu. ft. (cts.)	Quan. piped into State (M cu. ft.)	Quan. piped out of State (M cu. ft.)
Arkansas	9,700,000	$ 373,000	09.0	17,826,000	$ 3,306,000	18.5	8,126,000	.....
California	84,580,000	7,612,000	09.0	84,580,000	17,898,000	21.2	.....	.....
Colorado	4,000	400	10.0	4,000	560	14.0	.....	.....
Illinois	3,383,000	372,100	11.0	3,383,000	424,040	12.5	.....	4,000
Indiana	947,000	284,100	30.0	3,263,000	1,641,000	50.3	2,320,000	.....
Iowa	500	56	11.2	500	250	50.0	.....	4,752,000
Kansas	30,289,000	1,826,000	09.0	28,348,000	10,315,000	36.4	12,811,000	.....
Kentucky	5,872,000	646,000	11.0	15,268,000	4,884,000	32.0	9,396,000	6,382,000
Louisiana	70,267,000	2,108,000	03.0	65,987,000	4,476,000	06.8	4,013,000	.....
Maryland	.....	.....	....	705,000	472,000	67.0	705,000	.....
Michigan	700	78	11.1	700	350	50.0	.....	.....
Missouri	2,600	289	11.1	4,873,600	3,802,000	78.0	4,871,000	.....
Montana	486,000	24,345	05.0	486,000	88,300	18.2	.....	15,000
New York	6,947,000	1,598,000	23.0	15,777,000	7,676,000	48.7	8,849,000	.....
North Dakota	600	67	11.1	600	300	50.0	.....	4,564,000
Ohio	51,481,000	9,267,000	18.0	118,127,000	56,062,000	47.4	68,200,000	39,275,000
Oklahoma	140,631,000	15,469,000	11.0	111,681,000	24,800,000	22.2	425,000	16,536,000
Pennsylvania	101,276,000	20,255,000	20.0	130,733,000	50,657,000	38.7	40,287,000	.....
South Dakota	15,600	1,732	11.1	15,600	6,400	41.0	.....	.....
Tennessee	3,000	333	11.1	3,000	800	26.7	.....	4,013,000
Texas	47,945,000	3,835,600	08.0	60,119,000	14,165,000	23.6	16,186,000	138,494,000
West Virginia	195,288,000	19,529,000	10.0	79,338,000	18,829,000	23.6	3,144,000	.....
Wyoming	23,427,000	1,171,000	05.0	23,427,000	3,031,000	12.9	.....	.....
Total 1922	762,546,000	84,873,000	11.1	762,546,000	221,535,000	29.1	179,333,000	179,333,000
Total 1921	662,052,000	.....	....	662,052,000	174,617,000	26.4	149,791,000	149,791,000



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CLEVELAND.....16112 Euclid Avenue
DETROIT .....2201 First National Bank Bldg.
PITTSBURGH .....937 Union Trust Bldg.
PHILADELPHIA.....1220 Jefferson Bldg.
ST. LOUIS.....1794 Arcade Building
SEATTLE.....1301 L. C. Smith Building
BIRMINGHAM.....412 Jefferson Bank Building
PORTLAND.....516 Porter Building

THE AUSTIN COMPANY OF CALIFORNIA
LOS ANGELES.....733 A. G. Bartlett Building
SAN FRANCISCO.....708 Santa Fe Building

THE AUSTIN COMPANY OF TEXAS
DALLAS.....627 Lins Building

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Cleveland

We are interested in the erection of a

..... building, width.....

length ..... description.....

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Firm .....

Individual .....

Address .....

.....

De Laval Crude Oil Purifiers

—purify cut production more economically.

—stop loss of oil in b. s.

—reduce evaporation losses.

—soon pay for themselves with the above savings.

The coupon brings full details

The De Laval Separator Company

165 Broadway, New York 29 E. Madison St., Chicago
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DE LAVAL PACIFIC COMPANY
61 Beale St., San Francisco, Calif.

We would like to know how we can treat our production to stop the accumulation of b.s. and how we can, perhaps, reclaim enough crude from our b.s. pond to pay for installing De Laval Crude Oil Purifiers.

Name ----------

Company ----------

Address ----------

O-412-P

GEOLOGY OF HARPETH RIVER, TENN., AREA

(Continued from Page 58)

structure will be shallow as compared to locations made up on the hills at lower points on the structure, which would of course require deeper drilling. Commercial production in "sands" below 1,000 feet in depth is not anticipated. Salt water horizons and conditions are not known. Drilling is recommended on the school house side of the structure on the lower waters of Dog Creek or as offset to the old Judd well. If production is secured at this point private pipe lines may be laid to the Nashville, Chattanooga and St. Louis Railroad at the first north bend above Kingston Springs. The entire length in an air line of such pipe lines to a loading rack on the spur of the railroad would be approximately 1 mile.

NORTH CENTRAL TEXAS

(Continued from Page 44)

1,435 feet; Kentucky Oil Corp.'s No. 3 Wilson, drilling at 1,595 feet; Lynch and others' No. 1 Bridwell, drilling out a plug at 1,321 feet; Maer and others' No. 3 Wilson, drilling in brown shale at 1,485 feet; No. 4 Wilson, drilling at 1,445 feet; Morris and others' No. 2 Wilson, drilling at 1,525 feet; Moore and others' No. 1 Wilson, shut down on top of an oil sand at 1,593 feet; Murchison and others' No. 2-B Wilson, drilling in brown shale at 955 feet; Norton and others' No. 1 O'Donnell, having pipe trouble at 1,275 feet; Orth and others' No. 1 Warren, drilling at 355 feet; Pace and others' No. 1 Ford, drilling in blue shale at 1,602 feet; Perkins and others' No. 1 Parrish, bailing and testing an oil sand at 1,677 feet; Sampley and others' No. 1 Miller, standardizing on top of an oil sand at 1,330 feet; Shamrock Oil Co.'s No. 1-B Richardson, hole full of oil and standardizing on top of an oil sand at 1,320 feet; Staley and others' No. 1 Nichols, drilling at 1,600 feet. Sun Oil Co.'s No. 3 Farmer, shot with 12 quarts twice at 1,500 feet, has 500 feet of oil in the hole; Sunshine State Oil & Refining Co.'s No. 14 Carter Bros., drilling at 1,425 feet; No. 2 Parrish, drilling at 1,495 feet; Swastika Oil Co.'s No. 2-B Richardson, drilling at 855 feet; Underwood Drilling Co.'s No. 4 Wilmot, drilling at 1,000 feet; Dr. Wallace's No. 23 K. & K., running 6⅝-inch casing at 1,742 feet; Well-Duke Oil Co.'s No. 1 Garvey drilling in soft rock at 625 feet; White Oil Corp.'s No. 1 Wilson, drilling in mud at 1,405 feet; Williams and others' No. 1 Wilson, drilling in blue shale at 1,730 feet.

Young County

Completions—Mann and others' No. 5 Whittenburg, 20 bbls. at 1,880 feet.

Drilling—Byrens and others' No. 1 Mahoney, drilling by tools at 3,933 feet; Harrown and others' No. 1 Vick, drilling at 1,190 feet; Lindsay and others' No. 1 Costello, drilling at 515 feet; Logan and others' No. 1 Wild, drilling at 865 feet; McGuire and others' No. 1 Carter, fishing for casing at 1,875 feet; McKenzie and others' No. 1 Logan, drilling at 810 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Gibson, underreaming at 3,750 feet; No. 1 Moren, fishing for casing at 1,865 feet; Nash and others' No. 1 Bower, drilling at 1,085 feet; No. 1-D Williams, showing 20 bbls. of oil and 100 bbls. of water at 2,445 feet; Peter and others' No. 1 Boles, fishing for tools at 300 feet; Seaboard Oil & Gas Co.'s No. 4 Hughes, drilling in blue shale at 1,910 feet; Shamrock Oil Co.'s No. 3-A Bower, drilling in hard rock at 1,855 feet; Standard Petroleum Co.'s No. 1 McBrayer, drilling in hard black lime at 4,115 feet; Whitehead and others' No. 1 Graham, drilling in blue shale at 2,425 feet; No. 1 Johnson, fishing for casing at 4,229 feet.

Stephens County

Completions—Owens and others' No. 1 Walker-Caldwell, 100 bbls. after a shot at 3,185 feet.

Drilling—Mid-Kansas Oil & Gas Co.'s No. 3 Richardson, drilling at 415 feet; Moore and others' No. 3 Douglas, drilling in hard lime at 3,616 feet; Rochel and others' No. 1-A Sweeney, drilling in blue shale at 950 feet; Curry Pool Oil Co.'s No. 1 Compton, drilling at 1,48[illegible] feet; Empire Gas & Fuel Co.'s No. 4 Wallace, at 555 feet; Fidelity Oil Co.'s No. 1 Parks, drilling in soft rock at 825 feet; Graham and others' No. 1 Saunders, drilling at 2,255 feet; Hinkle and others' No. 1-B Jones, at 1,253 feet; Magnolia Petroleum Co.'s No. 4 Brown, hole full of water and drilling at 2,45[illegible] feet; Mahlstedt & Mook Oil Co.'s No. 1 Boyett, underreaming for 5-inch casing with a hole full of water at 3,420 feet; Rosser and Pendleton's No. 5 Jones, fishing for tools at 2,630 feet; Sinclair Oil Co.'s No. 5 Henderson, drilling at 2,80[illegible] feet; Swensondale Oil Co.'s No. 19 Swenson, running 6-inch casing at 2,400 feet; Texas Pacific Coal & Oil Co.'s No. 1 Ashmore, fishing for casing at 2,170 feet.

Eastland County

Completions—Root and others' No. 4 Bond, dry at 3,600 feet.

Drilling—Ablon and others' No. 1 Collins, cleaning out with 20 feet of oil in the hole at 3,005 feet; Knox-Lewis Oil Co.'s No. 2 Edison, drilling in sand with some oil showing at 2,870 feet; Magnolia Petroleum Co.'s No. 4 Ross, drilling at 2,400 feet; McLester and others' No. 2 Westmoreland, at 1,600 feet; Panhandle Refining Co.'s No. 8 Hightower, at 1,120 feet; No. 9 Hightower, at 130 feet; Rosenfield and others' No. 2 Gilbert, at 16[illegible] feet; States Oil Corp.'s No. 4 Quier, will drill deeper at 1,900 feet; Atlantic Production Co.'s No. 11 Fields, drilling in brown shale at 1,685 feet; Dougherty and others' No. 1 Johnson, drilling in blue shale at 1,805 feet; Gordon Petroleum Co.'s No. 1 Ray, drilling in black lime at 3,600 feet; Humble Oil & Refining Co.'s No. 1 Lanier, drilling at 2,05[illegible] feet; Mahew and others' No. 1 Lon[illegible] drilling in gray lime at 3,265 feet; Prairie Oil & Gas Co.'s No. 5-A Brooks, drilling in hard rock at 2,475 feet; Rose and others' No. 4 Carter, spraying some oil and drilling in lime at 3,665 feet; No. 1 Walker, fishing for casing at 3,30[illegible] feet; Rosenfield and others No. 1 Brennett, pulling 15½-inch casing at 2,11[illegible] feet; No. 1 Lewis, shut down for casing at 350 feet; Stover and others' No. 1 Ray, drilling at 2,350 feet; Turner and Clayton's No. 1 Harwood, drilling at 2,485 feet; No. 1 Rio Bravo, drilling at 3,040 feet.

Wildcats

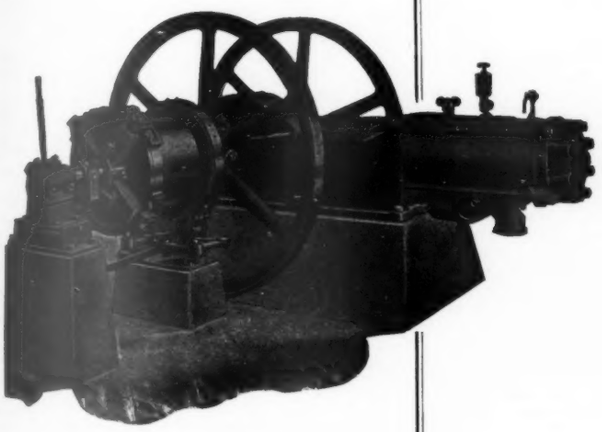
Shackelford County: Completions—Landreth Oil Co.'s No. 2 Brassell, 15 bbls. at 3,550 feet.

Drilling—Connally and others' No. 1 Parrish, drilling at 750 feet; Humble Oil & Refining Co.'s No. 1 Jackson, showing 3,000,000 feet of gas and drilling in lime at 3,450 feet; No. 1-E Poindexter, drilling in soft rock at 2,730 feet; Landreth Oil Co.'s No. 2 Lynch, fishing for casing at 3,385 feet; No. 14 Poindexter, fishing for tools at 2,510 feet; Texhoma Oil & Refining Co.'s No. 2 Black, underreaming casing at 2,700 feet.

Scurry County: Drilling—Hermleigh and others' No. 1 Burris, drilling at 2,060 feet; Lou-Tex Oil Corp.'s No. 1 Moore, cleaning out to 3,575 feet; will probably shoot a sand formation showing some oil at 1,775 feet.

Palo Pinto County: Drilling—Texas Pacific Coal & Oil Co.'s No. 1 Robinson, drilling by tools at 3,585 feet; No. 144 Stuart, fishing for casing at 1,695 feet; Costello and others' No. 1 Costello, cleaning out after a shot at 2,705 feet; Hess and others' No. 1 Cropper, drilling at 965 feet; Hughes and others' No. 1 Jones, drilling in a hard lime formation at 3,720 feet; Scott and others' No. 1 River Bed, fishing for tools at 3,713 feet; Simms Oil Co.'s No. 1 Costello, cleaning out and will set 6-inch casing at 3,620 feet; Singleton and others' No. 1 Holt, drilling at 3,420 feet; Zada Bell Oil Co.'s No. 1 Weldon, drilling in a sandy lime showing some oil at 3,950 feet; Moore and others' No. 1 Pruitt, drilling up a bailer at 1,800 feet.

Callahan County: Drilling — Moore and others' No. 2 Ackers, drilling at



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"BERT" CHILDS
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or make inquiry of any driller who is using a Boykin "Greyhound."

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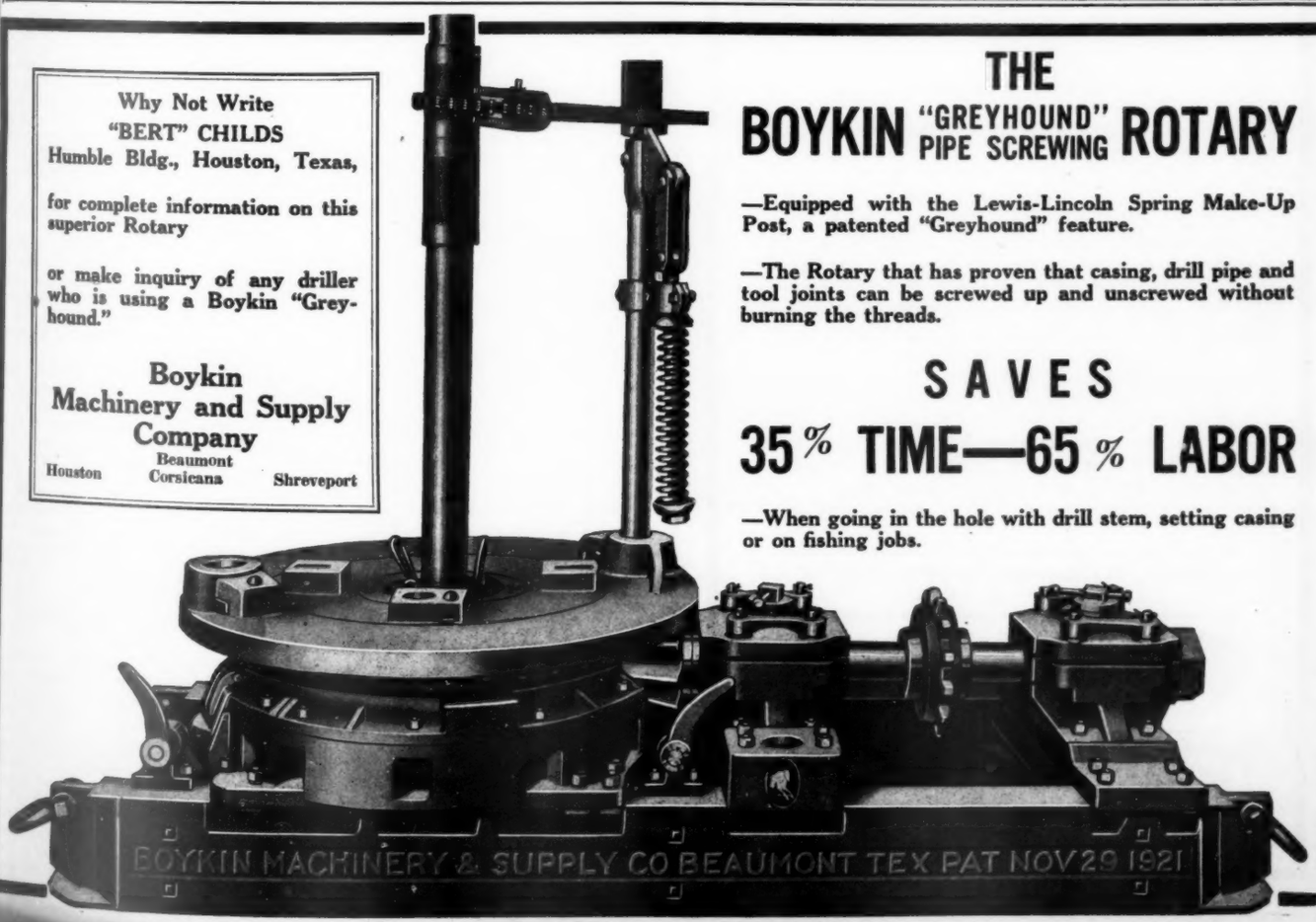
THE BOYKIN "GREYHOUND" PIPE SCREWING ROTARY

—Equipped with the Lewis-Lincoln Spring Make-Up Post, a patented "Greyhound" feature.

—The Rotary that has proven that casing, drill pipe and tool joints can be screwed up and unscrewed without burning the threads.

SAVES 35% TIME—65% LABOR

—When going in the hole with drill stem, setting casing or on fishing jobs.



When Night Approaches

DARKNESS is the habit of night. The cold light of stars serves merely to accentuate the blackness. The inconstant moon adds a variable quality but affords small relief. "The night cometh," sayeth the Bible, "when no man can work."

But man, perverse creature that he is, mounts life's speedometer on the instrument board of his activities side by side with the inexorable clock, and strives to make the one keep pace with the other. Life, he considers, is all too short at the best; the speed all too slow.

And so he invents means of rapid transportation; he establishes instant communication with far distant points; he converts darkness into light.

"And the best of all ways
To lengthen our days
Is to steal a few hours from the night,
my dear."

The Oil Man, engaged in the business of drilling wells where the common sources of incandescent light are not available, must have a safe and dependable device all his own for thwarting night, in order that one crew may follow another in uninterrupted service.

And so the Frick-Reid light plant, with a rated capacity of 1,000 watts, but an actual capacity and a degree of dependability beyond that of machines rated at 1,500 watts. A generator that shoulders its load 365 nights in the year without fail or hesitation, nor objects to an added bit of service on leap year.

In Oil Field Equipment—the Most HUMAN Organization in America.

Frick-Reid Supply Co.

Tulsa, Okla. Pittsburgh, Pa.

West of the Mississippi—Stores Everywhere

2,330 feet; Stone and others' No. 1 Barr, showing 1,000,000 feet of gas, may drill a little deeper at 1,423 feet; Slick and others' No. 1 Faulkner, topped a pay formation and showing some oil and fishing for a packer at 2,492 feet.

Clay County: Drilling — Crude Oil Production Co.'s No. 1 Kinder, drilling at 1,105 feet; Gulf Production Co.'s No. 1-A Boddy, fishing for four joints of 6⅝-inch casing at 2,790 feet; No. 3 Worsham, cleaning out at 775 feet; Lone Star Gas Co.'s No. 1 Martina, drilling at 300 feet; Nebraska Oil & Gas Co.'s No. 1 Myers, drilling in hard rock at 3,300 feet; Moore and others' No. 1 Hull drilling at 1,505 feet.

Montague County: Drilling — The Texas Co.'s No. 1 Rucktashel, running 12½-inch casing at 210 feet; Amerada Oil Corp.'s No. 1 Beasley, fishing for casing at 3,030 feet; Gulf Production Co.'s No. 1 Benton, drilling at 3,015 feet; Mascho Oil Co.'s No. 1 Howard, drilling at 2,185 feet.

Throckmorton County: Drilling—Ashcroft and others' No. 1 Polk School Land, drilling at 1,045 feet.

Armstrong County: Drilling—Magnolia Petroleum Co.'s No. 1 J. A. Ranch, drilling in hard lime at 3,855 feet.

Carson County: Drilling—The Texas Co.'s No. 3 Burnett, running 10-inch casing at 1,685 feet; Silk and others' No. 3 Burnett, drilling in blue shale and shells at 1,975 feet.

Hemphill County—Drilling: Piney Oil Co.'s No. 1 Hopkins, drilling in shells and red beds at 3,025 feet.

Hutchinson County: Drilling—Coline Oil Co.'s No. 1 Saunders, will test a sand at 3,219 feet; Humphries Oil Co.'s No. 1 Johnson, fishing for tools at 2,585 feet; Montgomery and others' No. 1 Johnson, underreaming 10-inch casing at 1,760 feet; McGee and others' No. 1 Smith Capers, cleaning out at 3,175 feet, Producers & Refiners Corp.'s No. 1-B Bivens, drilling in salt and red beds at 1,425 feet.

Potter County: Drilling—Producers & Refiners Corp.'s No. 1-A Bivens, underreaming 10-inch casing at 2,800 feet.

Wheeler County: Drilling—Skelly Oil Co.'s No. 1 Davis, drilling in blue shales and shells at 2,850 feet; Tyrell and others' No. 1 Sheldon, underreaming 10-inch casing at 1,405 feet.

A majority of the drilling tests in the Panhandle territory were shut down during the holidays.

PRODUCTION REPORT

Week Ending January 3, 1924

Burkburnett		
American Refining Co.	270	
Barkley & Meadows	1,975	
Humble Oil & Ref. Co.	660	
Gulf Production Co.	1,810	
Magnolia Petroleum Co.	3,595	
Middle States Oil Co.	170	
McMahon Oil Co.	475	
Panhandle Refining Co.	495	
Sinclair Oil & Gas Co.	75	
The Texas Co.	645	
Texhoma Oil & Ref. Co.	605	
Miscellaneous	12,075	
Total		22,850
Electra		
Empire Gas & Fuel Co.	1,545	
Humble Oil & Ref. Co.	130	
Griswold Oil Co.	460	
Gulf Production Co.	935	
Magnolia Petroleum Co.	4,960	
Middle States Oil Co.	150	
McMahon Oil Co.	200	
The Texas Co.	5,045	
Texhoma Oil & Ref. Co.	2,450	
Miscellaneous	4,440	
Total		20,315
Iowa Park, Etc.		
American Refining Co.	40	
Griswold Oil Co.	30	
Gulf Production Co.	40	
Middle States Oil Co.	5	
Texhoma Oil & Ref. Co.	40	
Miscellaneous	1,350	
Archer County—		
American Refining Co.	260	
Griswold Oil Co.	390	
Gulf Production Co.	315	
Humble Oil & Ref. Co.	100	
The Texas Co.	815	
Texhoma Oil & Ref. Co.	2,125	
Miscellaneous	14,355	
Petrolia—		
Gulf Production Co.	75	
Magnolia Petroleum Co.	50	
The Texas Co.	95	
Miscellaneous	150	
Total		20,735
Stephens County		
Empire Gas & Fuel Co.	115	
Gulf Production Co.	1,580	
Humble Oil & Ref. Co.	1,575	
Magnolia Petroleum Co.	950	
Mid-Kansas Oil & Gas Co.	1,930	
Prairie Oil & Gas Co.	1,190	
Sinclair Oil Co.	324	
The Sun Co.	730	
The Texas Co.	2,405	
T. & P. Coal & Oil Co.	1,305	
Miscellaneous	8,740	
Total		21,304
Eastland County		
Gulf Production Co.	635	
Humble Oil & Ref. Co.	150	
Magnolia Petroleum Co.	540	
Panhandle Refining Co.	490	
Prairie Oil & Gas Co.	915	
Sinclair Oil Co.	510	
The Texas Co.	395	
T. & P. Coal & Oil Co.	1,005	
Miscellaneous	2,565	
Total		7,205
Other Fields		
Strawn—		
T. & P. Coal & Oil Co.	245	
Miscellaneous	600	
Moran—		
Empire Gas & Fuel Co.	165	
Humble Oil & Ref. Co.	545	
The Texas Co.	300	
Texhoma Oil & Ref. Co.	335	
Miscellaneous	2,335	
Coleman County—		
Miscellaneous	165	
Brown County—		
Miscellaneous	265	
Comanche-Eastland—		
Humble Oil & Ref. Co.	150	
Magnolia Petroleum Co.	1,195	
Prairie Oil & Gas Co.	220	
Sinclair Oil & Gas Co.	70	
The Texas Co.	335	
T. & P. Coal & Oil Co.	635	
Miscellaneous	4,705	
Young County—		
Gulf Production Co.	155	
North American Refining Co.	120	
Sinclair Oil & Gas Co.	620	
Oklahoma Petroleum & Gas Co.	35	
The Sun Co.	30	
Panhandle Refining Co.	850	
The Texas Co.	120	
Miscellaneous	8,010	
Mitchell County	650	
Reagan County	170	
Jack County	30	
Total		18,915
Total all fields		111,324
Total last week		174,210
Gain		1,014

DECEMBER SHIPMENTS OF PRAIRIE INCREASE

The December shipments and deliveries of crude oil from Kansas, Oklahoma and North and Central Texas by the Prairie Pipe Line Co. were 4,162,700 bbls., or 134,283 bbls. per day. The figures indicate a considerable increase in the Prairie's business of supplying oil to refiners, as its November shipments were 2,650,566 bbls., or an average of 88,385 bbls. per day. The statement shows a gain in December of 45,898 bbls. a day or 34 per cent, over the movement for November, a gain of 53,610 bbls., or 39 per cent, over the September business of the company.

Compared with the Prairie Pipe Line Co.'s business for December 1922, the report for December 1923 shows a great falling off in deliveries. The shipments for December 1922 were 166,803 bbls. a day, or 32,520 bbls. in excess of the business of December 1923.

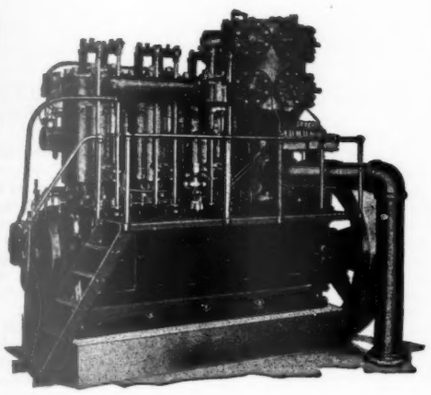
The business of the Prairie last month, however, is very encouraging to Mid-Continent operators. It shows a steady increase in the movement of Mid-Continent oil northward and eastward, which had been curtailed by California oil shipments via the Panama canal, and the noteworthy increase coming at a time when ordinarily a reduction might be looked for is a good indication of a resumption in the demand and better prices for Oklahoma, Kansas and North and Central Texas crudes.

ENTER PLEAS OF GUILTY

MILWAUKEE, Wis., Jan. 5.—Pleas of guilty in connection with indictments charging misuse of the mails in the promotion of an oil stock selling scheme have been entered by Edwin C. Kingsbury, attorney of Fort Worth, Texas, and Charles H. Kreigh, Pasadena, Cal., in United States District Court before Judge F. A. Geiger here.

The court granted the defendants until April 7 to arrange their business affairs before sentence is pronounced. The charge carries with it a maximum sentence of five years' imprisonment and a fine of not more than $1,000.

The Reeves Vertical Gas Engine—Compressors For Gas Booster Plants



Engine Sizes:
40 H. P. up to 250 H. P.

Engine-Compressor Sizes:
60 H. P. up to 160 H. P.

A few of the reasons why leading companies and engineers are purchasing the Reeves Gas Engines and Compressors.

They know the Reeves unit is not an experiment, having proven its reliability and worth over a period of about twenty years successful service.

Account of the simplicity of operation; low fuel and maintenance cost per horse power. One user just reported having operated last four units 16 months without shutdown.

All Compressors equipped with "Hope" Biplane, Patented, easy operating, high speed Valves.

Saving in installation time partly pays for unit.

Saving in plant construction cost from 20 to 50%, depending on location.

Branches Pittsburgh, Penna. Tulsa, Okla. Casper, Wyo

HOPE ENGINEERING & SUPPLY CO.
Mt. Vernon, Ohio, U.S.A.

Consulting and Contracting Engineers in Natural Gas and Oil.

ONE reason for the popularity of The Star Portable Drilling Machine is the saving of time and expense of moving and rigging up. A Star will do for you what it does for others as told in our booklet "PROOF"—sent upon request.

The Star Drilling Machine Co.
Akron Ohio
Factories
Akron, Ohio Chanute, Kans. Portland, Ore.
Long Beach, Cal.

REFINING AND MARKETING SECTION

N. P. M. A. DIRECTORS APPROVE OFFER OF 10,000,000 GAL. COSDEN GASOLINE

By Ralph T. Baker

CHICAGO, Jan. 5.—The details of the adopted universal coupons exchange plan were approved and progress of the association's advertising program was commended by directors of the National Petroleum Marketers' Association who met here today. The coupon and advertising plan in effect in Wisconsin was discussed and directors decided to push adoption of the Wisconsin idea in their States. The following executive committee was named for 1924: A. H. Caward, Waterloo, Iowa; S. S. Cramer, Milwaukee, Wis.; R. E. Gerkins, Dayton, Ohio; S. D. Hastings, Greenbay, Wis.; C. L. Maguire, Chicago; J. L. Murray, Bloomington, Ill.; and J. Nourse, Kansas City, Mo. Two vacancies on the board, left by resignation of John T. Berry, of Kansas City, and retirement of Mr. Smitha, of Atlanta, Ga., were left open to be filled later.

The directors approved a recent offering of 10,000,000 gallons of Cosden & Co., Tulsa, gasoline, through Maguire Petroleum Co., and association to its members. The association is oversold for the present year, having disposed of 11,000,000 gallons. The directors decided to exert all possible influence on Dodge Brothers, motor car manufacturers, to demonstrate to them that the oil industry was capable of furnishing satisfactory lubricants for its cars. They asserted the industry was not in any way responsible for the alleged inclination on the part of Dodge sales agents to sell inferior oils resulting in the recent decision on part of manufacturers to market its own lubricating oils for profit in competition with jobbers. Its directors suggested that Dodge Brothers issue certain broad general specifications to which oils must conform when sold for that particular make of car.

It is expected that St. Louis or Louisville will be chosen for the spring convention of the association, while Cleveland is expected to get the fall meeting. The association made good growth during the year and has $11,000 on deposit despite elimination of special subscription funds and reduction of membership dues.

A special effort will be made to launch the coupon book exchange and advertising campaign in a national way at the spring convention. The directors decided that all new membership applications should be first referred to the nearest director for approval then be passed on by the executive committee before being admitted. Definite standards and qualifications will be insisted upon in future admissions. The fact that some members have offered for sale in a limited way vacuum oils, a standard oil lubricant, brought out need of broad general specifications for light, medium and heavy independent oils. It was decided to fix upon some plan to guarantee continuity of quality and efficiency in connection with the sale of light, medium and heavy lubricants where sold under the association's national advertising insignia. The present association members selling vacuum oils will be allowed one year to reduce stocks and quit marketing the Standard products.

While awaiting final judgment, investigation of reports said to have been made, the directors asserted Standard domination or control of Hawkeye Oil Co. was insufficient to arouse suspicion. The record of Producers & Refiners Corp. was decided to be clear and above suspicion. The Producers & Refiners Corp. has signed the independence declaration and controls the Hawkeye Co. which has been a strong supporter of the association's advertising program.

MINNESOTA ASSOCIATION BECOMING MORE ACTIVE

The Minnesota Petroleum Association, an organization of the independent distributors and marketers of gasoline, kerosene and other petroleum products, has opened an association office in the Builders Exchange Minneapolis. W. D. Wamsley of the Shaffer Oil & Refining Co. is president of the association.

The association headquarters will be in charge of the newly elected secretary, Paul E. Hadlick, an experienced association man who has just arrived here from Washington, D. C.

In discussing the future of the association, Mr. Wamsley said:

"There are many practices existing in the petroleum marketing business which must be corrected if the industry is to retain its rank of second place among American industries. This can only be done through collective effort on the part of the jobbers through an association, for it has been wisely stated that what is everyone's business is no one's business. The M. P. A. will endeavor to eliminate wasteful practices of distribution, serve as a headquarters for the exchange of useful trade information, assist its members in a general way so far as possible, and encourage the greater use of its products by the public. Group meetings of members will be held throughout the State during the coming winter, to be followed in the early spring by a Statewide meeting in Minneapolis."

CONSOLIDATE OFFICES

KANSAS CITY, Mo., Jan. 5.—The Kansas City Refining Co., Manhattan Oil Co. and associated organizations, spoken of locally as the Jones-Gobel interests, will consolidate their various offices in the new Land Bank building, Kansas City, on the morning of January 14. In doing this the Kansas City Refining Co. and the Kansas City Refining Sales Co. officials will move across the Kansas line from the plant. Two entire floors, the eigth and ninth, have been leased. The chief owners in the organization, which includes a group of successful independent companies, are A. R. Jones, F. E. Jones, J. M. Parker and E. W. Gobel.

NEW REFINERY TO START

HOUSTON, Tex., Jan. 5. — The first unit of the Pure Oil Co.'s refinery at Smith's Bluff on the Neches River, between Beaumont and Port Arthur, will start operations early next month. W. P. Gage, of Dallas, president of the Pure Oil Pipe Line Co. and an officer of the Pure Oil Co., is now on the ground, and a delegaiton of other officers are expected to gather at Smith's Bluff from the general offices at Columbus, Ohio, including Dr. Cross, patentee of the Cross cracking process which has been installed. When all the units are completed the plant will have a capacity of 10,000 barrels per day. Mexia and Powell crude will be run for the present.

P. & R. MOVE TO DENVER PRACTICALLY COMPLETED

CHICAGO, Jan. 5.—Much of the office equipment at the former location of the Producers & Refiners Corp. in the Wrigley Building, Chicago, has been moved to the new central offices of the concern in Denver, according to a recent announcement from officers of the concern in Chicago. Work of dismantling the offices in Chicago and moving the equipment started Saturday, January 5, and it was hoped that the new Denver offices would be in working order by the latter part of the following week.

For the present time, the sales offices and traffic department will remain in Chicago, with the secretary of the organization and the attorneys. It is thought likely that some arrangements may be made for moving additional branches from Chicago within the next 30 days. A sales office will be located permanently in Chicago.

Removal of accounting, executive and purchasing departments to Denver will necessitate the transfer of about 50 employes of the company. The change was brought about as the result of a feeling among the executives that the head office of the company should be located closer to the center of operations. The move is important as it is expected to put the company in a better position to carry out its program of development work, not only in Wyoming and the other Rocky Mountain States but also in the Mid-Continent. Considerable expansion in distribution is considered a logical development of the new central location also.

F. E. Kistler, chairman of the board, will be located in Denver. W. L. Kistler, president, will be located in Tulsa.

APPOINTED MANAGER OF KANSAS COMPANIES

Thomas E Elliot, treasurer and manager of the Diamond Refining Co., Tulsa, has been appointed manager of the Kansas Oil & Refining Co. and the Alluwe Oil Co. of Coffeyville, Kans. Contrary to widely circulated reports the appointment does not involve a change in the ownership of the Kansas companies which are subsidiaries of the United Oil Refining Co. of London, Eng.

The Coffeyville plant of the Kansas Oil & Refining Co. has been shut down with no definite decision by officials as to when operations will be resumed. The Alluwe Oil Co. has production in the Kansas fields and controls the Alluwe Pipe Line Co. Mr. Elliot will continue to manage the Diamond Refining Co., primarily a jobbing concern.

MISSOURI MEETING

The mid-winter meeting of the Missouri Oil Men's Association will be held at the Statler Hotel, St. Louis, Mo., Thursday, January 10. Several matters of importance to the oil fraternity of Missouri will be discussed at the meeting. Horace G. James is president of the association and George S. Allee, secretary.

LARGE QUANTITIES OF GASOLINE MAY BE RECOVERED FROM STILL VAPORS

Methods by which enormous volumes of gasoline now lost in ordinary petroleum refining processes may be recovered by the condensation of still vapors are outlined in detail by D. B. Dow, associate organic chemist, Department of the Interior, in Technical Paper 310, just issued by the Bureau of Mines. At thirteen refineries from which data were collected, 128,651 gallons of gasoline, representing an average increased recovery of nearly half a gallon of gasoline per barrel of crude oil, were being recovered daily from uncondensed vapors. The figures represent the increased conversion into gasoline of 1.05 per cent of the crude oil charged, which would otherwise have been lost.

Losses of gasoline from uncondensed still vapors will tend to become larger in the future, the Bureau of Mines points out, because the growing tendency to eliminate evaporation losses in handling crude oil in the field will result in refineries receiving crudes containing much lighter and more volatile fractions. The magnitude of the losses resulting from noncondensation of still vapors has been realized by only a small proportion of the refiners and comparatively few plants have installed recovery systems.

Other conditions being equal, more uncondensed vapor will be lost in a refinery which has increased the gasoline yield from crude by installing cracking stills than in a skimming plant obtaining only the gasoline naturally present in the crude.

The loss in uncondensed vapors will be larger from a crude yielding high volatile gasoline than from a crude yielding low volatile gasoline. Losses due to uncondensed vapors are higher in summer than in winter.

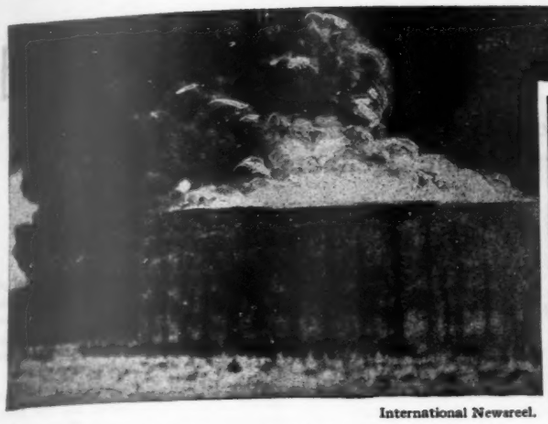
The higher the temperature of the stream the greater is the amount of uncondensed vapor. Stream temperature depends directly on the temperature of the cooling water and the coil surface. When stream temperatures exceed 80° the volumes of uncondensed vapors become increasingly large. Experimental and plant data show the effects of varying conditions of temperature.

In collecting the vapors at a recovery plant, a small vacuum is held by the intake of the compressor or by an exhauster on rundown lines where the vapors are trapped off by goosenecks. This gas passed through traps that remove any condensate carried in the lines.

If the sulphur content of the gas is high, the sulphur must be removed in a special unit, either by scrubbing with a solution of caustic soda or by contact with oxides of iron or lime suspended in water.

Several different processes can be used to recover gasoline from still vapors. Compression is the more common process. The gas is compressed to a high pressure and cooled. Gasoline vapors are condensed and collected, but any permanent gas pressure is not materially affected. In the absorption process the gas is passed through a distillate of low Baume gravity that absorbs the gasoline. When naphtha is used as the absorbent the naphtha is raised in Baume gravity to the point where it may be marketed as gasoline. When a heavy gas oil distillate is used, the gasoline is recovered from the gas oil by distillation. A combination of the two methods is used when the gas after compression is passed through absorption towers.

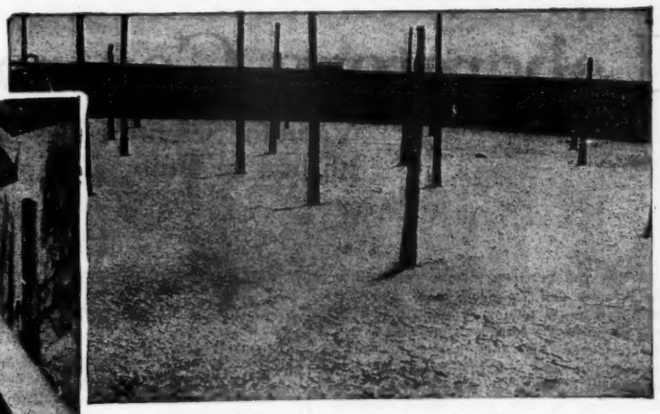
Copies of Technical Paper 310 may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.



International Newsreel.

When a 55,000 bbl. tank takes fire you want the right kind of foam, and plenty of it, delivered to the right spot by equipment which responds perfectly.

The Foamite mixing chamber, placed where it will function to greatest advantage when fire breaks out.



Here is a blanket of Firefoam over the oil after a fire which was promptly extinguished by a standard Foamite System. Tough, clinging, heat-resisting foam was delivered quickly and in adequate volume.

The foaming agent—the heart of the *Foamite* System

Why do fire reports show a clean record of performance for *Foamite* Systems, compared with the numerous disastrous failures of other foam systems?

What is the difference?

The *Foamite* System represents the best thought and experience of engineers specializing in this particular branch of engineering—fire protection. They include in the *Foamite* System only those materials and equipment which experience has proved to be the best suited for this kind of service, the one most important feature being the foaming agent.

Firefoam Liquid the Established Foaming Agent

The *Foamite* System uses Firefoam Liquid as the foaming agent. Several different substances will produce "foam" when freshly mixed with the chemical solutions. But these substances deteriorate in a relatively short time, while Firefoam Liquid remains intact and efficient during the storage period.

Under the test of actual fire the fire-smothering foam must not only *appear* to be tough and durable, but it must stand up and do its work. The foam must resist the intense heat of flaming oil.

Firefoam Liquid not only resists deterioration, and gives assurance of dependable protection over a period of years and under varying climatic conditions, but *its* foam offers the greatest known resistance to heat.

Firefoam Liquid established the standard in this field many years ago. It remains the heart of the *Foamite* System and one reason for its constant success.

Foamite 40-gallon portable engine, for emergency use on incipient oil fires in refineries, oil storage stations, filling stations, and on small tanks.

Correct operation is insured by Foamite-Childs engineering service

Because Foamite-Childs specialists have made a profession of subduing oil fires, they can design a *Foamite* System that exactly covers each individual risk on your property.

Their practical experience determines the precise quantity of chemical solutions needed—the requisite pumping power—pipe sizes—rate of application of foam—every item which may prove vital in a crisis. This highly specialized application of the foam principle has amply proved its value.

Through our many division offices, located at convenient centers, we are equipped to furnish *Foamite* Protection for any oil-fire hazard. In addition to the standard stationary system for large risks, there are the *Foamite* 40-gal. portable engine and the *Foamite* 2½ gal. hand extinguisher, for extinguishing smaller fires.

Our engineers will make recommendations and furnish rough estimates that place you under no obligation.

Foamite-Childs Corporation

Fire Protection Engineers and Manufacturers

726 Turner Street, Utica, N. Y.

Sales and Engineering Representatives in the leading cities of all countries

Laboratory Control Work Is Explained

Value of Scientific Testing Now Realized and Accomplished in Fully Equipped "Heart of the Refinery"

By W. E. Espy
Chief Experimental Chemist, Cosden & Co.

IMPORTANT SERIES OF ARTICLES

Oil men attending the International Petroleum Exposition and Congress in October will remember the exhibit of Cosden & Company as one of the most interesting features. The exhibit consisted of a display of all the products which the company obtains from crude petroleum. A few on that occasion had the opportunity of visiting the company's West Tulsa refinery which is not only the largest plant in the Mid-Continent Field, but ranks as one of the largest industrial organizations devoted to the manufacture of petroleum products.

The Oil and Gas Journal recently requested the management of the company to furnish a series of articles covering the operations of its refinery. In compliance with the request, F. B. Koontz, general superintendent of the manufacturing division, has obtained from each of the several departmental heads an article detailing the work of his or her department and explaining its relation to the operation of the plant as a whole.

Although these articles are of special interest to the refining and marketing fraternity, The Oil and Gas Journal believes that everyone in any way connected with the oil industry will profit by reading these contributions, written by experts whose combined efforts make possible the operation of the Cosden plant.

The accompanying article is by W. E. Espy, chief experimental chemist, and deals with physical testing laboratory control work. In next week's issue F. J. Hart will tell of the company's medical department with a second article by L. V. Kerst concerned with service work.

Additional articles dealing with other departments will follow.

When the petroleum indu try was in its infancy and, in some cases, even up to a few years ago, very little attention was given to the testing of petroleum and its products. In fact about the only specification and test in vogue was that of gravity. The tests were made by the stillmen or in rare cases by a chemist who had his laboratory in some odd corner of the refinery, provided this space was not needed for more "important" work.

This is not a reflection on the petroleum industry as the same condition existed in some other industries before the full value of scientific control was fully realized.

The situation gradually changed until the present; the larger refineries have installed laboratories fully equipped with the latest scientific apparatus and facilities for laboratory control and research work. These laboratories employ large corps of chemists, testers and other experienced men under the direction of highly trained petroleum chemists of long experience.

Present Day Laboratory

The present day laboratory has been called the "Heart of the Refinery" and truly so, because all questions of dispute in regard to quality, trouble in obtaining desired results in refining, meeting certain specifications, calculating necessary blends, increasing yields until the last drop of the more valuable constituents has been obtained, and finally shipping a product which fully meets the consumers' specifications, are brought to the laboratory for decision or investigation.

The Cosden Laboratory employs a corps of 65 men, is fully equipped with necessary scientific apparatus and represents an up-keep expenditure of more than $100,000 per year.

The following description of testing methods and apparatus used will give some idea of the vigilance exercised in order to manufacture the finest grades of gasoline, kerosene, lubricants, etc., from crude oil.

Testing Methods

The first consideration in testing a batch of oil is to obtain a sample which will accurately represent the contents of the car, tank or other container from which the sample is taken.

This is a point which probably has caused more disagreement and controversy than any actual variation in methods, technique or apparatus used in testing or analysis.

If the oil or other liquid to be tested has been thoroughly mixed, then the question of obtaining a proper sample becomes a simple matter, as a sample which represents the whole may be withdrawn at any point. In a great many cases the contents of a tank are made up of strata of different gravities. To get a representative sample of the whole, an aliquot portion of liquid must be removed at various depths through the whole. There are various means of doing this, but one of the more simple methods is to tie a bottle, weighted so that it will sink, to the end of a long string.

The bottle is dropped into the liquid and allowed to sink rapidly until it touches the bottom, then drawn back to the surface. This operation is repeated until the bottle is completely filled and should then contain an average of the product sampled.

In refinery phraseology the term gravity usually refers to the Baume gravity scale, but some refiners use specific gravity.

Specific gravity is possibly the more scientific term for expressing the relative weight of various substances but is not as convenient as the Baume scale.

Until recently there has been a great deal of controversy over the proposed Baume scale to be used in the oil industry.

There were at one time 11 different scales for liquids lighter than water. Chief among these was that based on the modulus;

Specific gravity equals 141.5 divided by 131.5 plus Baume used in manuals published by C. J. Tagliabue Manufacturing Co., and specific gravity 140 divided by 130 plus Baume used in Circular No. 57 published by the United States Bureau of Standards.

This difference has recently been ironed out by the United States Bureau of Standards, the American Society for Testing Materials and the American Petroleum Institute agreeing on the old Tagliabue scale. This is now known as the A. P. I. gravity standard for petroleum oils.

The specific gravity of liquids may be determined by several methods. The picnometer is a small flask in which a certain volume of liquid is weighed and compared against an equal volume of water.

The Specific Gravity

The Westphal Balance consists of a graduated beam on the end of which hangs a plummet suspended by a fine platinum wire. After balancing the beam, the plummet is immersed in the liquid to be tested; this decreases the weight on the beam as much as the weight of liquid displaced by the plummet. This beam is again balanced by hanging various weights on it. The specific gravity is then read from the graduations and weights on the beam.

The principle of the hydrometer is also based on the rule that "any object immersed in a liquid is buoyed up by a force equal to the weight of liquid displaced."

The gravity determination with a hydrometer is a very simple operation; the hydrometer is floated in the liquid to be tested and the reading is made on the graduated stem at the point where it emerges from the surface of the liquid. Due to the great thermal expansion of petroleum oils, the indicated gravity must be corrected for temperature to 60° F. This is done by a chart based on the coefficient of expansion.

The greatest value of the gravity determination is in control work on the stills. While gravity is not an exact criterion of other properties, it gives an idea of the tests to be expected on fractions made from certain crudes or intermediate products with which the operator is familiar, and even these known points will differ if the process of refining is permitted to vary to any considerable extent.

For example, a 56 gravity gasoline having a 437 maximum boiling point may be made from a still when it is run at a specified rate and temperature, using a certain quantity of steam. If, however, more steam is used, the temperature raised and the rate of distillaion increased, the gravity can still be maintained at 56°, but the maximum and intermediate boiling points will be higher.

It is possible to make a 50 gravity naphtha and a 60 gravity gasoline, having the same maximum boiling point, from the same crude oil, so that gravity of any petroleum product means nothing unless all conditions surrounding its manufacture are known.

Distillation Test

Due to the fact that gasoline and other petroleum products are a complex mixture of compounds having different boiling points, the method for determining the initial, maximum and intermediate boiling points is more or less arbitrary.

Unless the operator adheres very closely to a specified standard method and apparatus, his results will not be consistent, and will not check with determinations made by other operators.

A good many people think that it is only necessary to place some gasoline in any kind of flask with a thermometer in it, put a fire under it and boil of through some sort of condenser to make a fractional distillation determination. This has led to general confusion, and caused many controversies between distributors and purchasers of gasoline.

The United States Bureau of Standards, Bureau of Mines and the American Society for Testing Materials have worked steadily for a number of years to perfect a method which could be adopted as standard all over the country.

The present standard method is outlined in Bureau of Mines Technical Paper No. 323.

The distillation apparatus consists of an Engler flask, 100 cubic centimeters capacity. The flask has a long neck through which a thermometer is inserted, and a side tube on this neck through which the vapors pass to a condenser. The flask is supported on an asbestos pad with a hole 1¼ inches in diameter in the center, to allow direct contact of the heater on the bottom of the flask without heating the sides.

Distillation Apparatus

The condenser consists of a brass tube 22 inches long, passed through a condenser box packed with ice. This tube is connected with the flask through a cork to make a tight connection and the other end passes into a 100 cc. graduate for measuring the condensate. In making the determination 100 cubic centimeters of gasoline are placed in the flask, and the thermometer is inserted in the neck through a tight fitting cork so that the top of the mercury in the bulb is on a level with the lower part of the vapor outlet tube. This tube is connected to the condenser and heat applied to the flask so that the first drop will fall into the graduate between five and 10 minutes after applying heat. Distillation is continued from this point so that not less than 4 cc. and not more than 5 cc. will be distilled each minute and continued at this rate throughout the distillation.

The temperature at which the first drop falls from the condenser is called the intial boiling point, and the highest temperature attained at the end of the distillation is called the maximum boiling point. Temperatures are also read at each 10 per cent fraction and percentages at specified temperatures, such as 221, 284 and 392° F.

From the fractional distillation the refiner determines if there is any portion of lighter products which might be used in gasoline or naphtha or if there is any fraction in the gasoline and naphtha which should not be there.

It is also necessary to make the distillation determination to be able to meet specifications of the United States Government and various States. If the consumer knows how to interpret the results properly, it will aid him in selecting the correct fuel for his auto or any other internal combustion engine, and to meet the different climatic and seasonal changes in various parts of the country.

Kerosene can be used in a tractor. In summer an auto can be run on a gasoline having fairly high boiling points, but in winter gasoline having lower boiling points should be used to facilitate easy starting and complete volatilization, and gasoline for airplane use must have even lower boiling point ranges to insure

(Continued on Page 84)

The kind of service that sells Kelly Kats

Sometimes a truck-owner's need for traction is so great that he may buy Kelly Kats for this one quality alone. Another truck-owner may buy them for the exceptional mileage they give, or the cushioning they afford, but the majority of men who use Kelly Kats do so because they combine all these qualities to a marked degree.

This fact is emphasized in the following letter from the Rio Grande Oil Co., of Globe, Arizona:

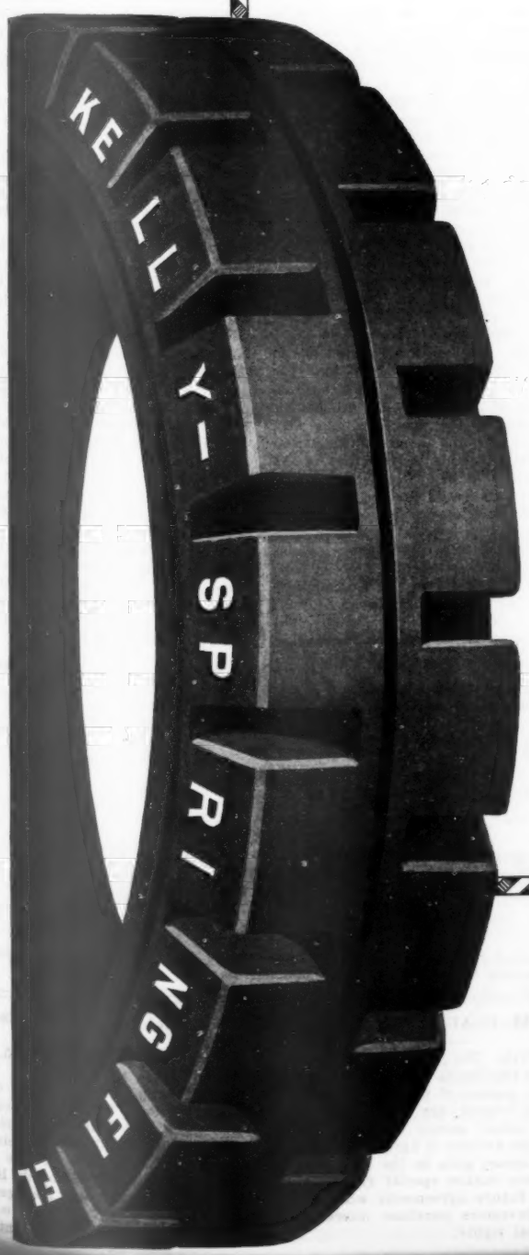
> "The added traction and resiliency of Kelly Caterpillar truck tires is sufficient to cause us to equip our trucks with them, but take mileage into consideration and there is no truck tire that will equal them."

When a truck-owner secures in Kelly Kats not only the one quality he particularly needs but also all the other qualities he wants, he naturally continues to use them.

Kelly Kats are today the most widely used truck tires on the market.

There are no Caterpillar tires but Kelly Kats

KELLY-SPRINGFIELD TIRE COMPANY
250 West 57th Street New York, N. Y.



"Has Formed A Perfect Stone Coating"

Tnemec Paints were used on all steel storage tanks, and on all sheet iron buildings at the Riggs Refinery, Bowling Green, Kentucky. The motoring public throughout a large part of Kentucky is well acquainted with the high quality of Comet Gasoline, manufactured at this refinery.

After a full year's test, the owner, Mr. Riggs, enthusiastically recommends TNEMEC Paint for Refineries and Storage Tanks in the following terms:

"It has now been one year since we used your TNEMEC Paint for the painting of our Steel Stock and Storage Tanks.

"The color of this paint is still good and it seems to have formed a perfect stone coating. We consider it an ideal paint for Steel Tanks and all metal covered buildings around a refinery.

"We desire to inform you that this paint has proved entirely satisfactory and are gladly recommending it to our friends."

The cement content in TNEMEC Paint formed this "perfect stone coating." It is this cement pigment which makes TNEMEC the ideal paint for steel, galvanized iron, concrete, brick and outdoor wood surfaces.

Ask Continental Supply Co., our distributors to the Oil Industry, about Tnemec Paint.

TNEMEC PAINT & OIL CO.
3119 Roanoke Road, Kansas City, Mo.
Chicago Office: 122 S. Michigan Ave

TNEMEC
A Standard by which other Paints will be measured
135

EASTERN REFINED MARKET FIRM WITH HIGHER GASOLINE PRICES EXPECTED

By N. O. Fanning

NEW YORK, Jan. 5.—The refined petroleum markets were generally firm during the past week, with a very good turnover reported in gasoline, kerosene, lubricants, fuel oil, gas oil and wax, both domestic and export trade. Taken as a whole the markets this winter promise to be exceptionally good, which means continuance of heavy production operations in order to supply current demand and still prepare for next summer's seasonal demand for gasoline and lubricants.

In some quarters an advance in the local tank wagon price of gasoline is expected next week, of 1 or 2 cents per gallon. Tank car offerings are scarce, and the situation is well in hand, as far as prices are concerned. There is reported to be a stiffening in refinery prices in the Mid-Continent Field, which will be reflected in this market shortly.

The only important change in the tank wagon market during the week was in Maryland, where the Standard Oil Co. of New Jersey and other marketers raised the price 1 cent per gallon to meet an increase of 1 cent in the State gasoline tax, effective January 1. The tank wagon price is now generally 17 cents, as against 16 cents previously.

In New York and New Jersey 15½ cents per gallon is the ruling tank wagon quotation, with shading of 1 or 2 cents in some of the inland towns.

The rapid movement toward construction of service stations by the big marketing companies is expected to have a stabilizing influence on the gasoline market, inasmuch as it should reduce substitution and the sale of low quality gasoline by small individual dealers. It should also stimulate consumption by improving the service and standardizing the product under trade names.

Oil Burning Grows

A highly important development in home oil burning is the fact that the Standard Oil Co. of New York has acquired patent rights to an oil burner manufactured by the Skinner Engine Co., Erie, Pa., and plans to manufacture and market this burner in its territory in the near future. The company will of course supply the furnace oil for the burner.

The sale and marketing of the new oil burner will be handled by a new company, organized under the laws of Delaware, all of the stock of which is controlled by the Standard Oil Co. of New York. It has a capitalization of $1,000,000 and is known as the Socony Oil Burner Corp. H. L. Pratt, president of the Standard Oil Co. of New York, will also act as president of the new concern.

It is also known that Gilbert & Barker, a subsidiary of the Standard Oil Co. of New Jersey, is working to perfect a cheap but efficient oil burner which the New Jersey company will market in its territory in connection with its sale of furnace oil. The Standard Oil Co. of California is also said to be perfecting a low priced oil burner for home use. All this reflects the rapid development of home oil burning, and the aggressive manner in which the large oil organizations are going after the new market for furnace oil.

Oil Export Movement Brisk

Although the movement of refined petroleum from Atlantic Coast ports to foreign countries continues brisk, there were no new fixtures in the tanker market during the past week. All of the foreign business reported during the week was for delivery from Gulf or Pacific ports. Recent fixtures reported in the tanker charter market include:

Steamer Lucigen (Br.) 3,173 tons net, petroleum, United States Gulf to France at 25s one port, 26s two ports, February.

Scottish Castle (Br.) 4,254 tons net, petroleum California to United Kingdom at 37s, December.

Rudolph Albrecht (Ger.) 1,612 tons net, gas oil, United States Gulf to River Weser at $6, January.

Other foreign charters included Steamer Weildrecht (Du.) 2,210 tons net, lubricating oil, Bahtoum (Russia) to United Kingdom and Continental ports at 24s, January loading.

Intercoastal chartering was brisk and included the Shipping Board steamer District of Columbia, 4,677 tons net, crude oil, California to Philadelphia or Tiverton, R. I., at 76 cents per bbl., February. Also The Texas Co. steamer Lightburne, 5,154 tons net, gasoline, Gulf Coast to Boston, at 45 cents, January.

Atlantic Coast Receipts

Crude and refined oil receipts at Atlantic ports during the week ended January 4 averaged 508,000 bbls. daily, while those for the month of December averaged 456,000 bbls. Increased receipts from Gulf and Pacific ports, and a decline in imports was the feature of last week's movement.

The following table shows estimated daily average receipts of crude and refined oil by water at the principal Atlantic Coast ports for the last two weeks, and for the months of December and November, 1923 (in barrels):

	Week Ended		Month	
	Jan. 4	Dec. 28	Dec.	Nov.
New York	195,000	156,000	193,000	215,000
Philadelphia	137,000	108,000	114,000	96,000
Baltimore	52,000	23,000	40,000	25,000
Boston	14,000	46,000	34,000	20,000
Fall River	11,000	21,000	15,000	13,000
Providence	25,000	7,000	22,000	12,000
Norfolk	11,000	.....	7,000	11,000
Charleston	11,000	.....	9,000	23,000
Miscellaneous	52,000	16,000	22,000	
Total daily average	508,000	377,000	456,000	438,000

Monthly Receipts by Sources	Gulf	Pacific	Imports	Total
Week, January 4	220,000	132,000	99,000	451,000
December	184,000	153,000	119,000	456,000
November	186,000	141,000	109,000	436,000
October	200,000	164,000	134,000	498,000
September	165,000	146,000	109,000	420,000
August	176,000	170,000	110,000	454,000
July	160,000	138,000	116,000	

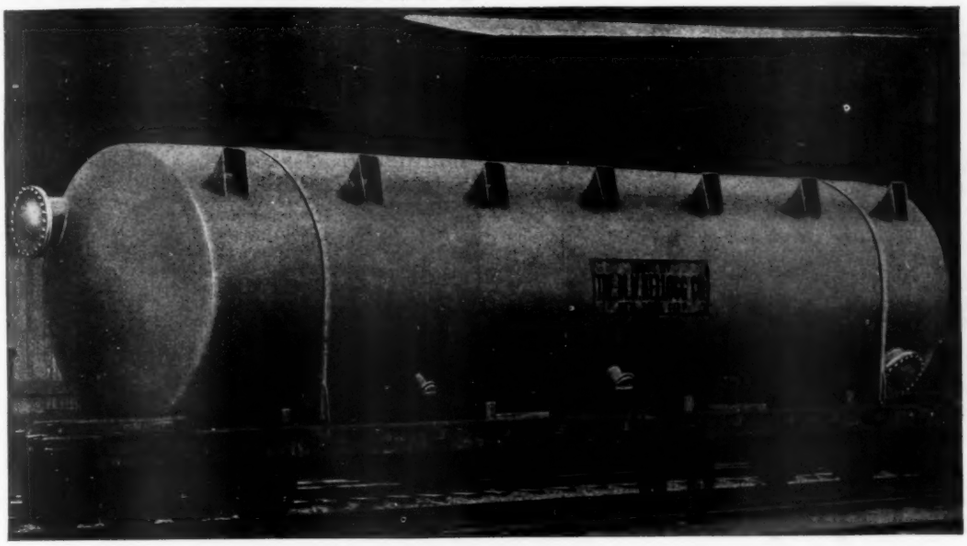
Estimated receipts of crude and refined oil by water at Atlantic ports during the last six months of 1923 were 81,715,000 barrels.

SPECIAL CLAUSE NECESSARY

HOUSTON, Tex., Jan. 5.—A recent decision of the Texas Supreme Court declares that owners of fractional interests in mineral rights are not entitled to bonus or rental money unless specially stated in the articles of agreement. Otherwise, the money goes to the land owner. The decision makes special clauses necessary in future agreements when operators or investors purchase interests in any mineral rights.

TRANSFER OFFICES

KANSAS CITY, Mo., Jan. 5.—The Kansas City offices of the National Transit Pump & Machine Co., Oil City, Pa., were closed here on the first of the year. The Mid-Continent district office, under William C. McLeod, is being transferred to Tulsa, where a new office is being opened in 1024 Kennedy Bldg. Mr. McLeod has been district manager for the company for 12 years and is widely known throughout the oil country.



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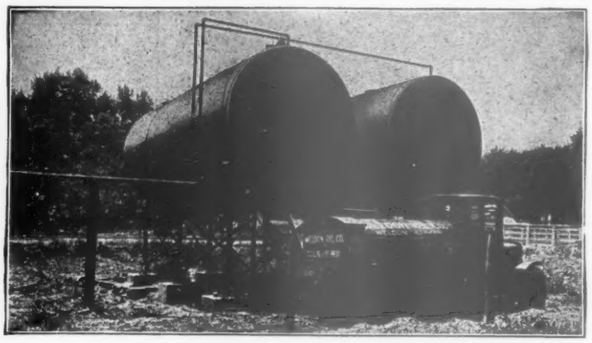

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Leader engineers have planned and superintended the installation of many bulk station installations. Their services are free for the asking.

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2—Truck Tank Loading Racks
1—Double Line Tank Car Unloading Rack
1—360 Gallon—3 Compartment Truck Tanker
1—150 Gallon—2 Compartment Ford Truck Tanker
1—Twin Rotary Pump, known as No. 3600

The pump in the above installation is driven by a gasoline engine.

Besides the above, the Leader furnishes the necessary valves and fittings which go with each installation.

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CHICAGO REFINERS PREPARE TO STORE

No Sign of Weakening on Prices. Higher for Natural Gasolines. Kerosene Firm. Fuel Oil in Little Demand. Gas Oil Firmer and Lubricants Holding Strong. Waiting on Crude Situation

By Ralph T. Baker

CHICAGO, Jan. 7.—After selling a few cars of New Navy for 9½ cents following the recent 2-cent tank wagon advance by the Standard Oil Co. (Indiana), Chicago refinery sales managers hung up prices of 9¾ and 10 cents for the trade to shoot at. During the early part of the week, the trade was glad to accommodate and aimed well up toward the mark set for them. But during the last few days of the week in review the trade showed a tendency to discredit the high marks and failed to notice anything above 9¼ cents.

The week was characterized by the advent of real winter. Thermometers in Chicago touched 20 degrees below zero Saturday after hovering in that vicinity for several days. There was little movement of petroleum products in the territory, due partially to an after-holiday lethargy and partially to the severe weather. Little spot gasoline was sold and inquiries vanished with the coming of winter blasts.

There is no sign of weakening on the part of the refiners, who are prepared to store gasoline for some time. The effect of cold weather has been felt, however, in the motor fuel market, with the result that buyers who might have paid 9½ cents for New Navy were inclined to haggle over a 9¼-cent price Saturday.

Opposing Opinions

Most of the movement of gasoline over the week has been on contracts, with the spot market forsaken almost entirely. Every jobber with a contract rushed in with it for partial protection. Jobbers without contracts were haunting the offices of the refiners without much success. The refiners still believe they have control of the situation and that a fundamentally upward market cannot be shaken by a period of bad weather.

Some of the deeper students of the market are inclined to shake their heads over the developments of the week, however. They feel that a general advance in Mid-Continent crude will be necessary to restore full confidence in the market. They point with some degree of assurance to the probable disaster which may attend a lengthy cold period and the failure of the Prairie Oil & Gas Co. to advance the price of the various grades of oil in Kansas, Oklahoma and North Texas.

Some who are pessimistic over the outlook, profess to see no reason why the Prairie Oil & Gas Co. should advance the price of crude now. They point to the probable revival of unrestrained drilling that would attend such a stimulating event. They declare also that this company has sufficient stocks for the present and that it would have no reason for increasing its purchases, in view of its curtailed sales to eastern refineries.

Men who take the other side of the situation assert that it is a matter of only a few days until new prices will be posted by this company. They assert that this company has been hunting new connections recently and does not want to lose any of its old customers due to a discrepancy in price. They declare that the price is justifiable and will stand. It is conceded by both sides that the Prairie Oil & Gas Co. is yet the dominant price factor in the Mid-Continent Field and, regardless of premiums and higher prices by other companies, its quotations will be accepted by oil men generally. It is because of this reason oil men everywhere are anxiously awaiting action on the part of this concern.

Development of interest in natural gasolines was one of the brightest spots of the week. Coming close on the heels of 9-cent Navy and cold weather, blenders started to work, and there was a good demand for absorption shortly after the tank wagon advance. On Friday several cars of Grade B material were sold to the trade for 8½ cents. Grade A stuff brought only a fraction higher although jobbers were being asked as much as 9½ cents. The more volatile grades did not arouse as much interest although there were a few sales at increased prices.

Along with the higher prices in natural gasolines was an increased interest in all more volatile grades of gasoline on the part of the jobber. The northern States were ordering large amounts of 64-66 375 end point gasoline for winter use. There was an increased demand for the 60-62 400 end point stuff with a noticeable shortage around Chicago. Little of the 68-70 360 end point gasoline was available.

Increased interest in the higher gravities was helped by rumors of another export order requiring about 500 cars of 64-66 375 end point gasoline and affecting southern Oklahoma, Texas and Louisiana refineries. These refiners were expected to switch from Navy to the 64-66 grade with the result of heightening the scarcity of the commoner motor fuel, regardless of export rumors, however, there has been a good domestic demand for higher gravity motor fuel and with winter definitely present, the development of these lines seems assured.

Blends have been helped by cold weather also. They have been the subject of a large number of inquiries during recent days. Many jobbers proclaim the superiority of a good blend over New Navy for use in automobiles of the northern States during cold weather. As a result blend-makers find a ready sale for their products. It is hard to get naphtha for blending, no sales having been reported recently, and blends are hard to find, even with the prices within a fraction of a cent below that of New Navy. Two sales at 9 cents were reported also.

Holding to Prices

Tank wagon and crude advances in other parts of the country during the past week did much to encourage the refiners in the Chicago region to hold fast to their present fair prices for petroleum products. Many refiners declare that higher prices are to be expected during the coming week, regardless of the weather. Others take more notice of external conditions but are just as firm in their decision to keep prices from slipping to the recent low level. Men who have been predicting another 2-cent tank wagon advance by the Standard Oil Co. (Indiana) feel that the cold weather has postponed indefinitely that desirable event.

Some marketers say the jobbers have been buying more motor fuel than they had expected and that the filling station men were filling much available tankage now. The demand from this source has had little effect on the refiners' supplies during the week and the jobbing trade cannot be expected to set up a wild scramble for gasoline with the thermometer below zero.

Kerosene Firm

Kerosene held firm during the week with some signs of strength due to cold weather. There is a good chance that additional demand for this fuel will develop with continued cold weather, which makes it impossible to unload fuel oil on gas oil.

The movement of fuel oil was not exceptionally brisk, with considerable stuff purchased in December at lower prices arriving at its destination in this

Heavy Duty Oil Engines

300 H. P. Price-Rathbun Oil Engine direct-connected to alternator at the plant of the Avery Rock Salt Mining Co., Avery Island, Louisiana.

Price-Rathbun Engines will economically adapt themselves to any load conditions between full and no loads. This close regulation makes them highly satisfactory for operating alternating current generators in parallel, driving air, gas or ammonia compressors, and pumps for pipe line or power service.

These engines have positive fuel injection without the use of compressed air, and consequently avoid the complications incident to the use of high air pressures.

The ignition is by temperature of compression—the fuel consumption of Price Engines being 0.45 pounds per shaft horsepower hour.

Another feature of these engines is their remarkably small consumption of lubricating oil.

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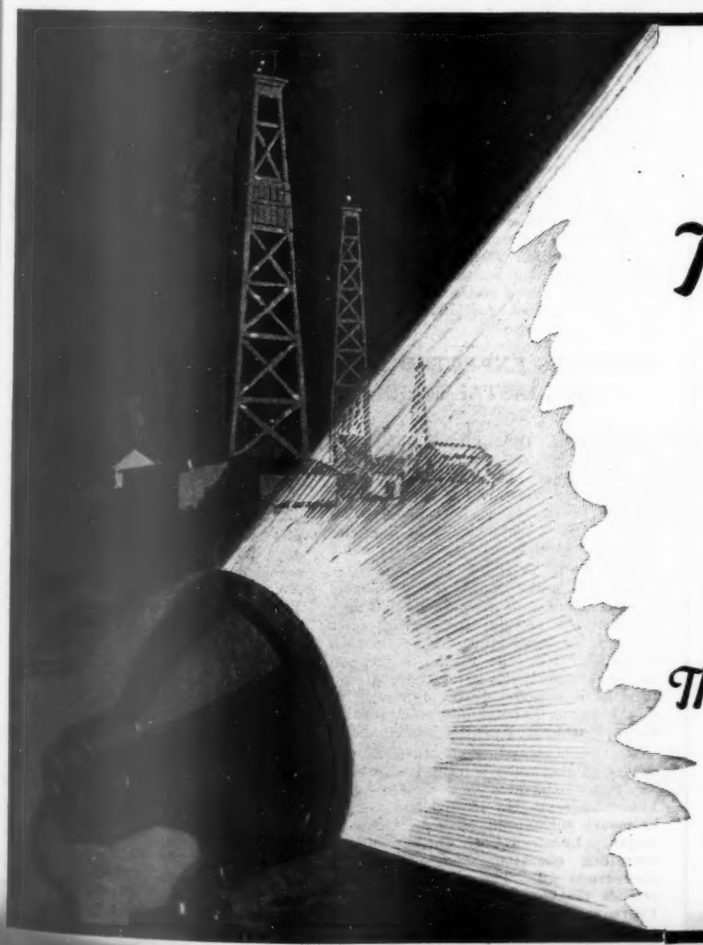

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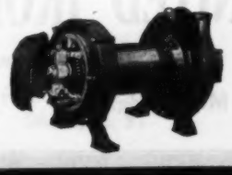

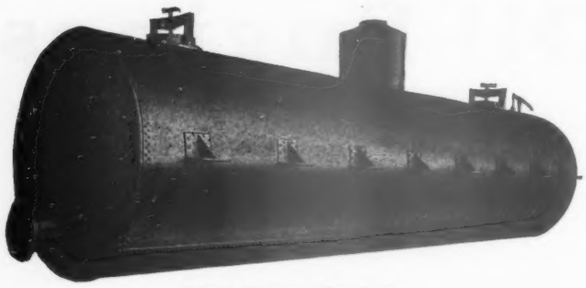

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recently. The railways are said to be out of the market in this area and there is little new demand for fuel oil here, although it is continuing strong at refinery centers. Refiners talk considerably about $1 fuel oil but the bulk of the stuff was sold around Chicago at 90 cents during the past week, with some touching 95 cents and a few cars going as low as 85 cents. No real spot market for fuel has developed.

Gas oil and straw distillate showed some indications of life during the advent of the cold weather without attracting any remarkable demand. The prices were slightly firmer, however, and there was a likelihood that they would be sought more eagerly during the next few days. Five-cent kerosene in the Chicago territory was a doubtful article, with no recent sales at that price and few touching the 4⅞-cent figure. Basic price seemed fixed at 4¾ cents.

Lubricants Firm

Lubricants are reported firm. Slight advances are reported in Gulf Coast oils with chief attention being paid the unfiltered red oils, which continue firm. Higher prices for the filtered oils are anticipated also. Oklahoma lubricants made little change during the week, although one manufacturer showed evidences of considerable interest in bright stock, with sales at an advanced figure. The 200 vis. pale oils also are attracting considerable attention and there is a good demand for bright stocks among other refiners. Wax is scarce and the tendency is strong.

Considerable encouragement is obtained from the fact that Oklahoma independent refiners are paying premiums for crude and reported unable to make additional connections. This feature is pointed out as an indication of a real shortage of crude in that territory, thus alleviating any worry over the possibility of large increases to refinery runs on short notice.

There is a distinctly cheerful situation for the consolation of the refiner, many oil men point out. It is true that refiners had many indications for a good year January 1, 1923, and that conditions which followed changed the outlook from one of optimism to pessimism. Refiners are inclined to look with optimism on the outlook for 1924, however. They argue that they have the additional features this year of more readily accessible statistical figures, declining fields instead of Tonkawa and other large growing pools, a declining California, decreased runs, and more motors. They are prepared to discount some bad weather and to store considerable refined stocks, but they feel that their outlook for 1924 is fundamentally optimistic.

ADVANCES EXPECTED IN COASTAL MARKETS

HOUSTON, Tex., Jan. 7.—Following the holiday lull, the demand for zero cold test lubricants shows pronounced improvement. Prices are but little changed for last week, ½-cent advances being noted in a few instances. But inquiries are more frequent and buying is being done with less dickering.

This quickness on the part of buyers is being charged to the opinion that zero cold test oils are due for another price advance, if coastal crude oils are marked up again. And the feeling is general among refiners that coastal crude oil will go to $1.50 a barrel during January. If that happens, finished oils seem sure to advance at least 1 cent a gallon.

The 1-cent a gallon for each 25-cent change in the crude market is the basis for many contracts now being made. These contracts are of sufficient volume to insure substantial business for some plants. Lubricants are being sold at prevailing quotations, based on $1.25 cent crude oil. The contracts further provide that each 25-cent fluctuation of February, refiners are inclined to hold. a corresponding movement of the price of the lubricant, the date of shipment to determine the quotation.

Only the unfiltered oils so far have responded to the 25-cent advance in the price of crude oil. All refiners have marked quotations up at least 1 cent a gallon. Some advances have been more than that but none more than 2 cents.

Unfiltered oils are moving at quotations prevailing for the past two months. Most of the filtered oils are sold under trade marks, the refiners having their own distribution. This leaves filtered oils to go into the open market and the demand has not yet warranted an advance in price.

There is appreciable strength in the gas oil market. Offers of 3¾ cents are being rejected. The gas oil that is moving is going at 4 cents, while some plants are holding for 4½ cents. Cargo shipments through December took most of the surplus gas oil out of the Houston refining district. With the best season for the product coming in January and February, refiners are inclined to hold.

Fuel oil, so far, has not responded to the change in the crude oil price structure.

PENNSYLVANIA MARKET SHOWS IMPROVEMENT

OIL CITY, Pa., Jan. 4.—A marked improvement has been registered during the past week in the northwestern Pennsylvania refined market. The demand is excellent, prices on almost all the products with the exception of kerosene are advancing and the prospects seem to be very good.

Gasoline continues to move at a good rate for this time of the year. The refiners here have marked up their quotations on this product until some are now asking 11 cents for the motor fuel grade, which is an increase of 2 cents over quotations of a couple of months ago. The refiners are expecting and hoping for an increase in the tank wagon market as the tank car prices are getting about as high as the tank wagon market will allow.

Kerosene sort of marked time during the week. Prices were not changed and there was no real increase in the demand.

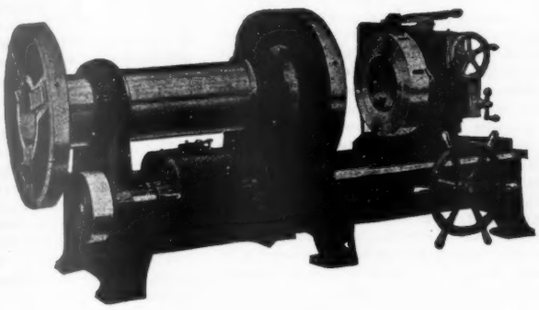
The strong feature of the market continues to be lubricants. Many of these are almost impossible to obtain in the local district and the prices on some of them have soared greatly during the past few weeks. Six hundred steam refined, for instance has been advanced to 35½ cents, a gain of 2 cents in less than two weeks.

TAKES OVER EASTLAND PLANT

The Western Gasoline Corp. of Fort Worth, Tex., has taken over the 4,000-gallon natural gasoline plant of the Berwick Gasoline Co. at Eastland, Tex. The new owners expect to enlarge the plant at once and also erect a new plant in Texas. At a recent meeting of the Western Gasoline Corp. the following directors were elected: T. L. Clark, president, Fort Worth; Louis Bendit, vice president and manager, Kansas City, Mo.; C. C. Clark, vice president, Tacoma, Wash.; J. W. Chadwick, secretary-treasurer, Kansas City, Mo.; R. B. Brain, Kansas City, Mo.

COMPANY REORGANIZED

HOUSTON, Tex., Jan. 5.—The Southwestern Refining Co. at Sour Lake, with a plant capacity of 400 barrels of lubricating stocks per day, has been reorganized and incorporated. The product of the refinery is sold to the Southern Pacific Railroad. New officers are: C. J. Laughren, president; R. B. Moody, vice president; W. I. Hunter, secretary; R. M. Coram, general manager. The plant was recently erected and has been in operation for about one month, running Sour Lake and Saratoga crude.



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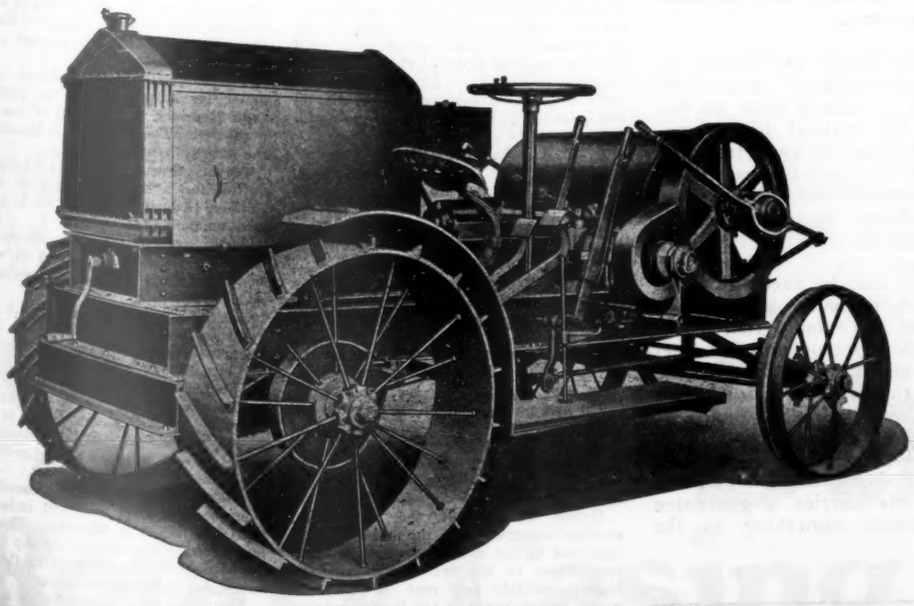

Cuts operating cost. Wide range of speeds. Operating levers centrally located. Three speeds and reverse on spool or road. Special features: Shafts mounted on Ball Bearings, heat treated Nickel Steel Gears, Steel Clutches, Bronze Bushings in all parts running loose on shafts; moving parts are enclosed running in oil, protected from dust and dirt. Power take off pulley for belt work. Drawbar on rear full width of machine.

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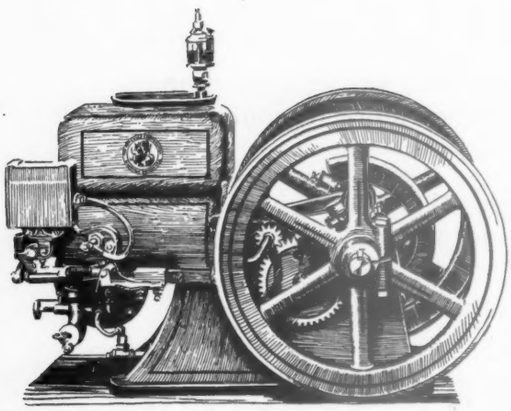
The engine that learned rough-necking where Spud McGuire learned it * ** out where they wrote the book. An oil-man's power-plant, right!



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Engine Division Dept. E.
Evansville, Ind.

LABORATORY CONTROL WORK EXPLAINED

(Continued from Page 76)

the very best conditions and eliminate as far as possible any danger of failure.

A number of States now have specifications for gasoline, some of which follow closely the United States Government specifications and are very good. Other States have specifications apparently written by some "political job holder" or a chemist with no knowledge of petroleum products. These latter specifications are very poorly written and in some cases absolutely foolish. For example, one State includes in its specifications the flash point of gasoline. There are some States which specify high gravities for gasoline which prevents the consumer in that State from purchasing a cheaper gasoline of lower gravity.

As a matter of fact, lower gravity gasoline can be made which has a range of boiling points, just as good or better, and more power than some of the higher gravity gasoline sold.

Flash and Fire Tests

There are numerous apparatuses and methods for determining the flash and fire points of oil; all of which are based on heating the oil to a point at which it will flash when a small flame is applied to the surface and then increasing the temperature to a point where it will continue to burn when ignited.

The three types of apparatus in general use in this country at present are: The Cleveland open flash cup for lubricating and other heavy oils, the Tagliabue open cup for kerosene and similar light oils, and the Pensky-Martens or Bureau of Mines closed flash apparatus. In operating the Cleveland flash apparatus, the cup is filled to the ring on the inside of the cup. This is three-eighths of an inch from the top. The cup is set on a steel plate one-quarter of an inch thick with a hold 2 3/16 inches in diameter, in the center. Heat is applied to the bottom of the cup by means of a Bunsen burner so that the temperature of the oil will increase at the rate of 10 degrees per minute. The temperature is determined by means of a thermometer suspended in the oil so that the bulb is about one-eighth of an inch above the bottom of the cup.

A brass tube with a pin hole opening in the end is attached to a gas jet by means of a rubber tube. The gas is regulated so that a flame the size of a small pea is obtained at the tip of this tube. At each five degree increase in temperature in the oil cup, the small tip of flame is passed over the surface of the oil, taking care not to actually touch the surface. The point at which a small flame is observed is called the flash point. Heating is continued at the same rate until a point is reached where the oil will continue to burn without being extinguished. This is called the fire point.

Ascertain Fire Hazard

The Tagliabue open cup for kerosene, is operated in the same manner except that the temperature is increased at the rate of two degrees per minute. This apparatus consists of a glass cup immersed in a water bath.

The various closed cup apparatus have a cover over the top with a small hole which may be uncovered momentarily to apply the tip of flame. Only the flash point is determined in this manner as the fire point must be determined in an open cup.

The fire point is useful in ascertaining the fire hazard for oil in storage or being handled. It also gives an indication of the point at which the oil will start to volatilize and determines in part its ability to stand up under high temperatures.

Before the day of the automobile, gasoline was a drug on the market; kerosene was in far greater demand, so that the refiner in his zeal to extract the highest possible per cent of kerosene would use as much of the lighter portion of the crude as he could put into kerosene. This sometimes led to the kerosene having a very low flash point and made it dangerous for use in kerosene lamps. This made it necessary to have laws prohibiting the sale of kerosene having a flash below a certain point; usually 120° F. The present great demand for gasoline and improved methods of refining precludes the possibility of manufacturing kerosene of such low flash as to be dangerous except in case of negligence or accidental mixture with gasoline.

Cloud and Pour Test

The cloud test determines the temperature at which any portion of the oil becomes solid and separates, making the oil cloudy in appearance, and the pour test determines the lowest temperature at which the oil will flow.

The tests are made in a cylindrical glass jar about 6 inches high and 1¼ inches inside diameter. The jar is filled to a depth of 1¼ inches with the oil to be tested. A thermometer is inserted through a cork so that the bulb will be just below the surface. The glass jar is placed inside a glass or metal jacket which in turn is surrounded by a mixture of crushed ice and salt. The jar containing the sample is removed at each 5 degree drop in temperature and observed to see if thre is any separation of small particles; the point at which the sample first becomes cloudy at the bottom of the jar is the cloud point.

The temperature is allowed to drop until the oil becomes solid; five degrees are added to the temperature at which the oil becomes solid, and this temperature called the pour point.

The cloud test is useful for testing burning oils such as railway semaphore lamps which are exposed to extremely low temperatures as any precipitation of the oil would clog the wick.

The pour test is useful to determine the ease with which oil can be poured from barrels exposed to cold weather and the possibility of clogging the lubricating system of automobiles or other machinery in cold weather.

The pour test is also an indication of the quantity of paraffin contained in paraffin distillate and serves as a guide to the refiner in pressing the oil in the manufacture of paraffin wax and lubricating oils.

Viscosity Test

Viscosity describes the fluidity or "body" of an oil or other liquid. For example, water flows very readily and has a very low viscosity, while molasses flows very slowly and has a high viscosity.

The standard viscosimeter for lubricating oils in the United States is the Saybolt Universal Viscosimeter, and for fuel oils the Furol tube is used in the same instrument.

The English use the Redwood viscosimeter for lubricants and the Admiralty type Redwood for fuel oil at low temperatures. The French and German use the Engler viscosimeter.

All of these are based on the time required for a measured quantity of oil to flow through a small tube at a certain temperature.

There are several other viscosimeters based on the torsion exerted on a disc suspended by a wire in a revolving cup filled with oil.

As the viscosity increases with lower temperatures and decreases at higher temperatures, the temperature at which the viscosity is determined must always be quoted with viscosity number.

The viscosity of neutral oils and low viscosity blends is determined at 300° F. and the viscosity of bright stock, etc., is determined at 210° F. in the Saybolt viscosimeter.

The Saybolt Universal Viscosimeter consists of a main tube 4.91 inches long by 1.171 inches in diameter. This tube has a larger cup around the top for the purpose of leveling the oil to the same height for each determination.

The main tube terminates in a small outlet tube 0.0689 inch in diameter

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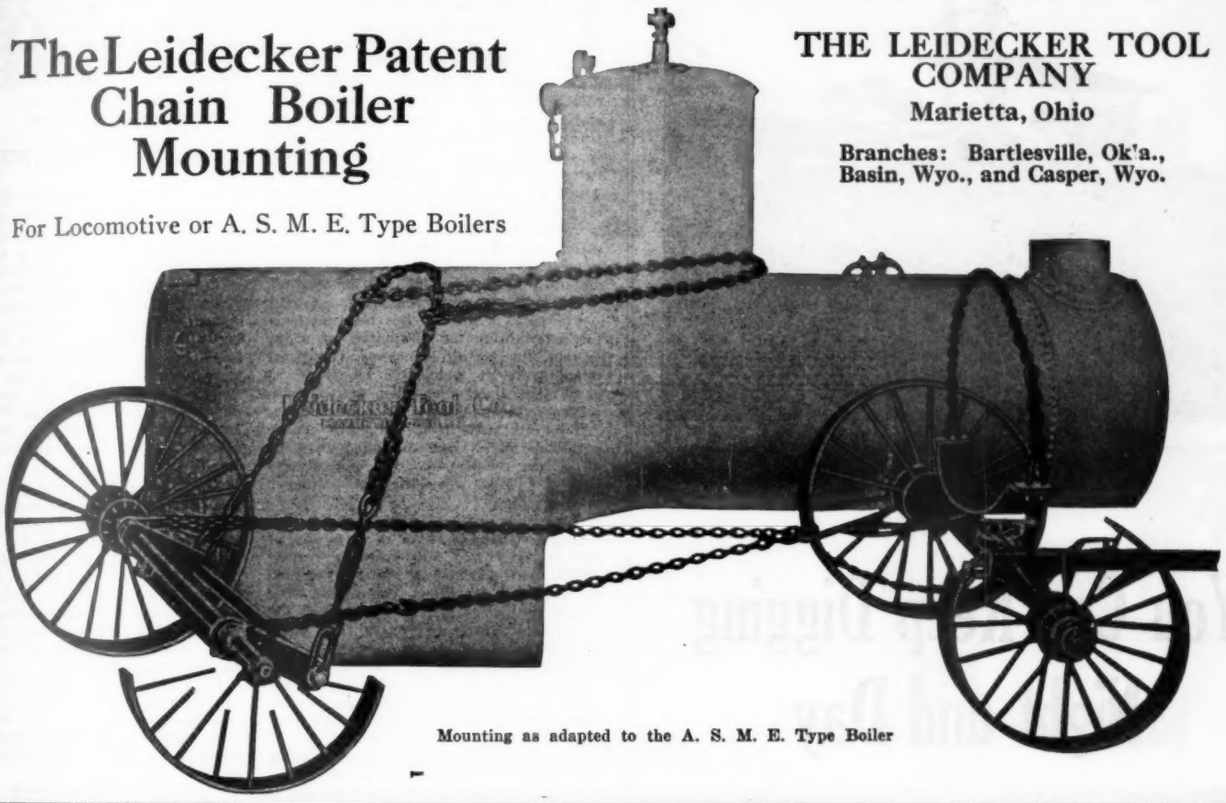

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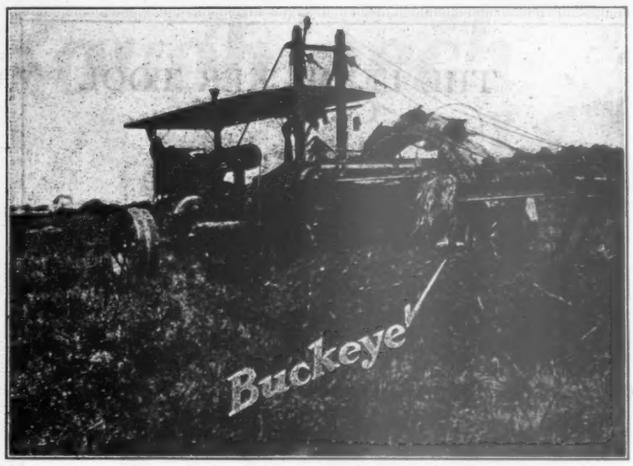

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Buckeye

0.478 inch long which protrudes through the bottom of the water jacket surrounding the oil tube. This outlet tube is in turn surrounded by a larger tube in which a cork can be inserted to keep the oil from flowing until ready to make the test.

Saybolt Viscosity

In making the determination the main tube is filled with oil, and the water bath and oil brought to the proper temperature before allowing the oil to flow through the outlet. When the temperatures are properly adjusted a receiver which holds exactly 60 cubic centimeters is placed under the outlet. The cork is removed from the outlet and a stopwatch started simultaneously. The time in seconds required for 60 cubic centimeters to flow through the instrument is called the Saybolt viscosity.

Viscosity is one of the best methods for determining the suitability of a lubricant for certain purposes: however, temperature at which the oil is to be used must always be taken into consideration when making such classification.

Two oils made from different crudes or blends and having the same viscosity at a low temperature will not always have the same viscosities at a higher temperature.

Viscosities are not additive figures. For example, a 50/50 blend of two oils of 100 viscosity and 300 viscosity respectively, will not give a viscosity of 200 as indicated by direct calculation, but would be lower than the calculated figure. As a matter of fact, a trial blend of the viscosities shown in the example gives a viscosity of 165. There are several formulas by which viscosity blends may be calculated, but these are so cumbersome as to be impossible for the ordinary layman.

The viscosities of lubricating oils manufactured by Cosden & Co. are kept uniform by constant checking and testing by the laboratory.

The viscosities of oils manufactured by the Cosden Refinery will range from 70 to 5,000 seconds Saybolt at 100° F. and from 35 to 210 seconds Saybolt at 210° F.

Color

The color of petroleum products is one of the less important tests from the standpoint of actual merit, as a fuel or lubricant, but is one of the more important features from the salesman's view point because a good many consumers demand oil of a certain color.

Most people want a light colored oil, but some demand darker hues of a certain shade—probably to match the color of their car, their sweetheart's hair or some other piece of scenery, and many are sincerely convinced that their engine will stop dead if a different shade of oil is used.

If all the facts regarding the manufacture of a certain oil are known, the color will give an indication of the degree of refinement which the product has attained; but if all the facts are not known, color means nothing. Of course it is absolutely necessary to adopt certain colors for certain products and keep them uniform from day to day, because this will be some assurance to the consumer that he is getting a product uniform in other characteristics.

The Saybolt Chromometer is the instrument used to determine the color of gasoline or kerosene. It consists of a stand holding two upright tubes, one of which is graduated and holds the oil sample, and is sealed at the bottom with a clear glass disc. The other tube is open at both ends and holds the standard yellow color disc in the bottom. A mirror reflects light up through these tubes to an eye piece at the top through which both tubes may be observed at the same time.

The graduated tube is filled with oil then withdrawn through a small valve at the bottom until the color of the oil exactly matches the color of the standard color glass in the other tube. The depth of oil in inches, represents a certain color as indicated on a tube supplied with the instrument.

For lubricating oils, the Union N. P. A. colorimeter is used. This instrument is arranged so that the color of the oil in a four-ounce bottle may be compared to standard color glasses, placing the instrument so that they may be observed at the same time. There are 14 standard colors with this instrument, ranging from pale yellow to dark red.

W. KENTUCKY-TENN.

(Continued from Page 56)

No. 1 Rufus Oliver at 50 feet; Ohio Fuel Oil Co. is spudding No. 3 on the Kelly-Miller farm; Farmers Oil & Gas Co.'s test, a half mile south of Richardsville, is fishing for tools at 300 feet.

Sandidge-Francis-Biddle Pool: Foster and associates of Dayton, Ohio, are making hole at 250 feet on their No. 5 Dr. found from 380 to 400 feet and was given a 40-quart shot. In the same vicinity, the Summer Valley Oil Co. got a 3-bbl. pumper at 610 feet in its No. 3 Vincent. In the city limits of Glasgow, Border and others' No. 1 Wilson was found dry at 400 feet.

The Oscamp Development Co. is planning a deep test on its Oscamp farm, 5 miles south of Glasgow. The well will be started with a 12-inch hole and carried to a depth of 2,200 feet. No. 1 on this property was put on the pump about 55 years ago and it is said to have produced in the neighborhood of 200,000 bbls. It was finished at 400 feet. There are 17 other producing wells on the property.

Four new wells were started during the week in the new pool to the south and west of Glasgow, also one at Oil City, one at Coral Hill and one on the Harston farm along the Jackson Highway.

Cumberland County

The wildcat test of Douglas St. Clair on the Ethel Baker lease, 15 miles west of Burkesville, in the Marrowbone Creek district has been declared dry at 745 feet, 150 feet below the shale. This test was watched with keen interest by operators as it would have opened an entirely new pool had it been a producer.

Continuous rainfall retarded development work in the Cumberland County Field to a great extent and very little progress was made.

Bear Creek: E. M. Treat & Co.'s No. 1 Sam Riddle is shut down awaiting tools to fish out the working barrel, which was lost last week. The Paragon Development Co.'s No. 1 Spear is drilling at 50 feet below the Pencil cave. Wilcox Bros. are drilling at 650 feet in No. 1 Sarah Sheckles and should encounter the Pencil cave formation within the next 75 feet. This test is located 1 mile north of the Sam Riddle well at Modoc.

Sulphur Creek: The Kanawha Oil Co.'s No. 2 Williams is making hole at 250 feet. No. 1 on this property is making 15 bbls. per day from the deep sand. Douglas St. Clair's No. 1 Victoria King is down 400 feet and drilling. W. S. Raydure set 6¼-inch casing at 150 feet in his No. 2 Mrs. Coop. Morris & Combest are drilling at 286 feet in their No. 1 Hub Groce. This well is being drilled 2 miles south of the Huddleston lease on Sulphur Creek. The Combest Oil Corp.'s No. 5 Huddleston is drilling at 550 feet. This property will be connected with the Paragon lines at once. On the adjoining property the Morris Petroleum Co.'s No. 3 is drilling at around 489 feet. No. 1, completed last August has so far produced 5,500 bbls. of pipe line oil. No. 2 was a duster. A contract was let for four additional wells to be drilled on this property at once. Heckethorn Bros. of Oil City, Pa., were awarded contracts. Morris & Combest have let a contract for the drilling of two wells on the G. W. Anderson lease in the Galloway Creek district, which lies between production at Kettle and Judio Creek.

Kettle Creek: The Gartian Estate has spudded in their No. 4 Bud Kerr, 400 feet north of No. 1 Anderson. Banta

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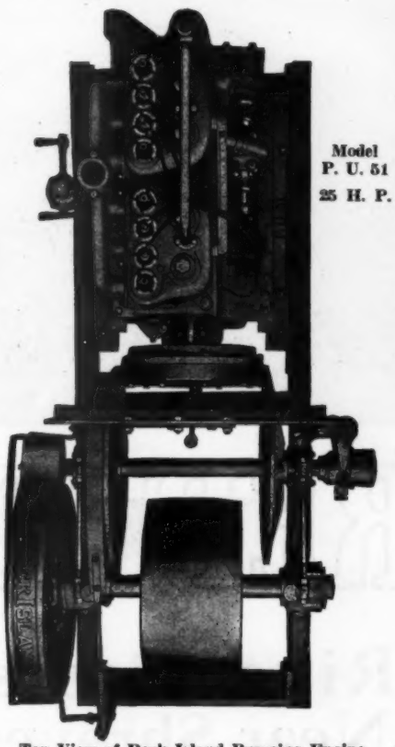

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and others' No. 1 Logan is being rigged up. Same parties are starting a well on the Turn Smith lease. W. S. Raydure is drilling No. 1 Porter Huddleston at 1,275 feet. His No. 1 Sam Smith is down 800 feet. The Powell Oil Co.'s No. 3 Arch Short is shut down at 1,060 feet. The Atlantic Oil Co.'s No. 1 Dowell is still pumping water.

The No. 1 Strange of Baker and associates, at Renox Creek, is drilling at 700 feet. In the Burkesville vicinity. Wilcox Bros. are making hole at 175 feet in No. 1 Simpson. In Clinton County, A. J. Early's No. 1 Wes Wallace is going ahead at 1,050 feet. Gas was encountered at 1,045 feet.

GULF COAST

(Continued from Page 52)

sand fields, has filed on 10 miles of the Frio River bed, and secured a permit to drill two wells. The Grubstake Investment Co. has objected to the filing and the matter will be thrown into the courts. The State Land office joins with the Coyle-Colcord Co. in the litigation. The San Balt Oil Co. is rigging No. 3 Stitz in McMullen County.

Bexar County

In Bexar County, the Alamo Gas Co.'s No. 2 Washell, in the Gas Ridge section, is making 1,000,000 feet of gas. Roy Allison and associates of Houston, have a derrick up for No. 1 Welder, 4 miles southeast of Beeville, in Bee County. In Bastrop County, Maxwell and Johnson are rigging No. 1, located 3 miles northwest of Red Rock.

The test on Outlaw Dome in Montgomery County is idle at 1,800 feet. South Bend, Ind., parties have made a location for a test south of Magnolia in the same county. In Fort Bend County, the Gulf Production Co. and Snowden and McSweeney's joint No. 9 Davis at Big Creek, 7 miles south of Richmond, is drilling below 1,800 feet and same interests' joint No. 6 Wheat is around 1,100 feet.

E. F. Simms has a location for a test near League City, Harris County. The Colorado-Bernardo Oil Co.'s No. 1 in Colorado County, is shut down with a location made for No. 2. Tubing is being run in the South Liberty Oil Co.'s No. 1 White, 4 miles south of Liberty, Liberty County, to pump at 5,140 feet. Oil stands up 1,800 feet in the hole and a small well is expected.

Milam County Crude Boosted

The Owens Refining Co., which takes the production from the shallow sands in Milam County, has posted $1 per bbl., an advance of 15 cents over the previous quotation. Jennings and others' No. 1, Branch, near Rockdale in that county, is rated as a 10-bbl. well.

N. LOUISIANA-ARKANSAS

(Continued from Page 48)

The Magnolia Petroleum Co. has derrick up for No. 4 Patton, Section 32-15-16; setting 2½-inch tubing at 2,250 feet in No. 3 Smith and rigging up No. 4, Section 31-15-15. The Majestic Smackover Oil Co. is arranging to test No. 2 McElroy at 2,285 feet, Section 29-15-16.

The Mangus Oil Co. has rig up for No. 1 fee, and is rigging up to drill in No. 3, Section 24-15-17. Newton and associates are setting 6-inch casing at 1,960 feet in No. 2 Cunningham, Section 25-15-16.

The Penguin Oil Co. set 6-inch casing at 1,960 feet in No. 2 Hardin, Section 27-15-16. The Smith Refining Co. has derrick up for No. 5 fee, Section 30-15-16; set 6-inch casing and drilled to 2,025 feet in No. 3 Patton and down 2,100 feet in No. 5, Section 31-15-16, with rig up for No. 6, same section.

Snowden & McSweeney are rigging up No. 3 Taylor, Section 29-15-16. Solmson and others are down 2,170 feet in No. 2 fee, Section 30-15-16. The Standard Oil Co. is drilling at 50 feet in No. 4 Solmson, Section 29-15-16 and is moving in rig for No. 11 Umsted, Section 32-15-15.

Staple and others have rig up for No. 2 Smith, Section 36-15-17. Stumph and Beddell abandoned their location for No. 1 Townsite in Section 30-15-16. The Sure Oil Co. set 6⅝-inch casing at 2,225 feet in No. 2 fee, and drilled to 1,100 feet in No. 3, Section 30-15-16. It tested No. 2 B. T. Laney dry at 2,313 feet in 6 feet of sand with a show of gas and is arranging to go deeper, Section 31-15-15.

The Texas Co. set 6-inch casing and is arranging to test No. 1 Chandler at 2,293 feet, Section 30-15-16 and has 6¼-inch casing set at 2,180 feet in No. 2. It set 6¼-inch casing at 2,160 feet in No. A-3 Solmson, Section 29-15-16 and is arranging to test No. B-1 Solmson at 2,295 feet, Section 32-15-16.

The V. K. F. Drilling Co. is building to test No. 3 Patton, Section 32-15-16 at 2,257 feet and set 10-inch casing and drilled to 1,200 feet in No. 4, same section. Whittaker and associates are down 2,000 feet in No. 2 Berg, Section 29-15-16. Woodley Petroleum Co. set 6-inch casing and drilled to 2,000 feet in No. 2 Patton, Section 32-15-16.

Stephens Field

Columbia County Area: The Atlantic Oil Producing Co. put No. 4 Milner on the beam with 40 bbls. production at 2,120 feet, Section 24-15-20. The same company set 12½-inch casing at 60 feet in No. A-1 Wepfer, Section 25-15-20. Hickman and associates set 6-inch casing at 2,010 feet in No. 2 Smart, Section 13-15-20.

The Magnolia Petroleum Co. is rigging up to drill its third well on the Hammond lease, Section 25-15-20.

Ouachita County

The Atlantic Oil Producing Co. is down 1,890 feet in No. 4 John Wepfer, Section 30-15-19. The North Central Texas Oil Co. has made location for No. 1 Burris and has derrick up for No. 2 in Section 18-15-19.

Bellevue-Bossier

One producer was completed in the shallow sand territory in Bossier Parish during the week, Bliss & Weatherbee getting a 25-bbl. pumper at 414 feet in Bliss & Weatherbee A-10, Section 15-19-11.

The Humble Oil & Refining Co. is drilling at 230 feet in Bliss & Weatherbee A-8, Section 10-19-11, and R. O. Roy at 365 feet in No. 25 Scandland, Section 15-19-11.

Rigs are up for three new wells in this district; Olmstead and others' Strange A-13 in Section 23-19-11, R. O. Roy's No. 24 Scandland, in Section 15-19-11, and the Standard Oil Co.'s No. 11 Bliss & Weatherbee, in Section 10-19-11.

Caddo Parish

Two small pumpers were completed in the Pine Island district, both in the chalk rock. The Dixie Oil Co.'s No. 57 Robertshaw, in Section 14-21-15, made 10 bbls. at 1,715 feet and the Fortuna Oil Co.'s No. 18 Robertshaw, in Section 14-21-15, made 7 bbls. at 1,670 feet.

In the Pine Island district, the Dixie Oil Co. is rigging up to drill No. 58 Robertshaw, in Section 14-21-15; the Fortuna Oil Co. is drilling at 1,335 feet in No. 12 Herndon, Section 22-21-15 and the Muslow Oil Co. is drilling at 915 feet in No. 3 Brown fee, Section 31-21-15.

The Humble Oil & Refining Co. has a fishing job at 2,890 feet in its deep test on the Youree Randolph lease in Section 24-20-15, 5 miles east of Mooringsport. The Louisiana Petroleum Co. is drilling at 3,000 feet in No. 1 Brewer, Section 35-23-16, 5 miles northwest of Vivian.

Claiborne Parish

The Ohio Oil Co. set 10-inch casing at 100 feet in No. 1 Crump, Section 13-23-8.

De Soto Parish

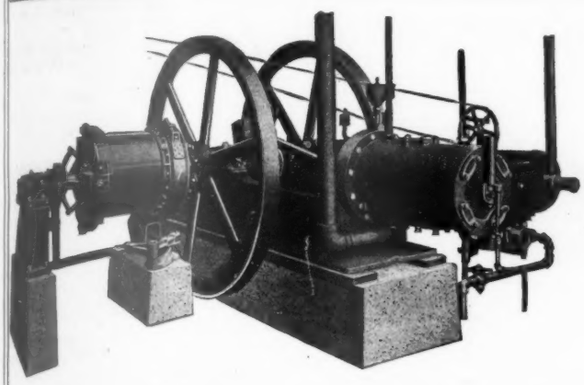
C. R. Tyrell has started two interesting tests southeast of Mansfield in De Soto Parish. No. 1 Porter, in Section 22-12-13, is rigging up to drill and derrick is being built for No. 2 Porter, in Section 15-12-13.

Red River Parish

The Fortuna Oil Co. is drilling at 2,700 feet in No. 16 Armistead, Section 24-12-11, in the old Bull Bayou district.

Louisiana Wildcats

Bienville Parish: The Hodge Hunt Lumber Co. abandoned its test on



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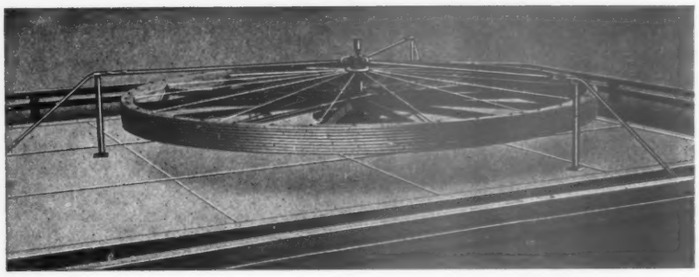

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Hodge lease in Section 31-15-5, going into rock salt at 277 feet.

The Ohio Oil Co. is drilling at 2,420 feet in No. 1 Bodcaw Lumber Co., Section 19-16-6.

Bossier Parish. The Oil Field Gas Co. completed a 40,000,000-foot gas well at 2,655 feet in No. 1 Bolinger, Section 29-23-11, 10 miles northeast of Plain Dealing.

Palmer & Davidson completed No. 1 Childers, in Section 18-16-11, making 5,000,000 feet of dry gas at 838 feet.

Perkins and others abandoned their test, No. 2 Vance, Section 18-19-13, at 2,600 feet. The test is 8 miles north of Shreveport in undeveloped territory and failed to show anything of promise.

La Salle Parish: The Urania Petroleum Co. got salt water at 2,120 feet in No. 2 Urania, Section 20-10-2e, and the test had been abandoned. No. 3 in the same section is rigging up to drill. These tests are 50 miles south of the Monroe gas field and 60 miles east of the Red River oil field, the nearest production.

Helm & Burch have derrick up for No. 1 Urania in Section 21-11-2e, 6 miles north of the Urania Petroleum Co.'s wells.

Lincoln Parish: The Four Creek Oil Co. is drilling at 1,390 feet in No. 1 Colvin, Section 27-20-3w, 15 miles southwest of Farmerville.

Morehouse Parish: The Carson Carbon Co. is drilling at 1,400 feet in No. 1 Irvin, Section 28-20-5e; Cronin & McKenzie at 2,190 feet in No. 2 Perry, Section 13-20 4, and the Southern Carbon Co. is closed down on account of high water at 745 feet in No. 11 Spyker, Section 17-20-5.

Ouachita Parish

The only completion of the week in the Monroe gas field was The Texas Co.'s No. 3 Gibbs in Section 29-19-5, making 15,000 000 feet of dry gas at 2,245 feet.

J. M. Huber's No. 4 fee, in Section 5-18-5e, is rigging up to drill. The Magnolia Carbon Co. set 12½-inch casing at 195 feet in No. 2 fee, Section 18-20-5. The Southern Carbon Co. is drilling at 1,765 feet in No. 25 fee, and rigging up to drill No. 26 in Section 27-19-5.

The Standard Carbon Co. set 8-inch casing at 895 feet in No. 2 Puckett, Section 22-19-5. The Texas-Louisiana Carbon Co. set 6-inch casing at 2,205 feet in No. 3 fee, Section 4-19-5 and The Texas Co. set 6-inch at 2,170 feet in No. 4 Gibbs, Section 20-19-5. The United Oil & Gas Production Co. set 6-inch casing at 2,125 feet in No. 1 Kerr, Section 12-19-4.

Union Parish

Operations in Union Parish are of steadily increasing interest and it is practically assured an oil pool is in process of development.

In the Farmerville district, the Arkansas Natural Gas Co. is rigging up to drill No. 1 Templeton, in Section 19-23-1e. James A. Noe and others are drilling at 100 feet in No. 1 Gulley, Section 36-21-1e. Cargiles and others have derrick up for No. 1 Heard, in Section 25-21-3w.

The Ohio Oil Co. is rigging up to drill No. 1 Dubach Lumber Co. in Section 15-20-1w and the Neddo Petroleum Invincible Corp.'s No. 1 Smith, in Section 2-23-3w. Roxana Petroleum Corp. is rigging up to drill No. 1 Smith in Section 30-23-2w. Tarver and others have derrick up for No. 1 Payne, in Section 30-21-1w.

In the east end of the parish, 10 miles west of the Monroe gas field, the Union Power Co. has four wells drilling on the Union Saw Mill Co.'s lease.

Webster Parish

The Ohio Oil Co. completed No. 1 Martin in Section 34-23-10, making 37,000,000 feet of gas at 2,650 feet. The well is 18 miles west of Plain Dealing, in the north end of the Webster gas field.

In the Cotton Valley district, the Fortuna Oil Co. has two wells rigged up and ready to start drilling; No. 1 Pruitt in Section 17-21-9, and No. 1 Statton in Section 31-22-10.

O'Brien and others are drilling at 1,510 feet in No. 1 Doles, Section 26-21-9, and the White Oil Corp. has made a location for No. 1 Gleason in Section 31-22-9. In the southeast corner of the parish, the Standard Oil Co. is drilling at 925 feet in No. 1 Woodward & Walker, Section 16-17-8.

Palmer & Blunt are drilling at 800 feet in No. 1 Anders, Section 6-8-10, 9 miles west of Minden.

Arkansas Wildcats

Clark County: The American Drilling Co. is shut down 620 feet in No. 1 Wilson, Section 15-8-22.

Drew County: The Monticello Ridge Oil Co. has abandoned No. 1 Wilson at 2,505 feet in Section 10-12-7. W. R. Rhodes is down 1,120 feet in No. 1 Martin, Section 27-12-8.

Grant County: The Parr Oil Co. is down 1,820 feet in No. 1 Prague, Section 25-5-12. The Texas Co. is down 25 feet in No. 1 Chicago Land & Timber Co., Section 14-6s-13w.

Hempstead County: Johnson and associates set 10-inch casing and drilled to 620 feet in No. 1 State, Section 12-13-27. G. W. Simmons, trustee, is drilling at 2,170 feet in No. 1 Adams, Section 36-12-27.

Lafayette County: The Lewisville Syndicate is drilling at 1,990 feet in No. 1 Osborn, Section 16-15-24, 6 miles north of Lewisville, 16 miles south of Hope and halfway between Texarkana and Stephens. L. K. Wilburn and others are down 300 feet in No. 1 Hughes, Section 21-19-23.

Little River County: Gaines and others are down 1,910 feet in No. 1 Goodwin Timber Co., Section 15-13-29. Johnson and others have shut down No. 1 Hawkins at 1,090 feet in Section 10-11-31.

Nevada County: Burnham and associates are drilling at 557 feet in No. 1 C. D. Perry, Section 12-15-22. The Transcontinental Oil Co. is drilling at 2,400 feet in No. 1 Blakely, Section 14-13-20.

BUILDING OF TANKS TREATED BY EXPERT

(Continued from Page 38)

of the earliest successful jobs of this character was a tower, built in 1920, by a welding contractor in the South. This tower, being 22 feet in diameter and 30 feet in height, was built of three-sixteenths-inch plate which, prior to being delivered on the job, had been formed to the desired radius at very little cost compared with the usual process of laying out, punching and fitting up through which plates must pass in preparation for riveted construction. The bottom and top reinforcing angles were welded solid to the shell. Not a single rivet was used in the construction of the tower nor was it necessary to punch any holes in the plates even for erection purposes. The plates were clamped into place and welded one to the other, all the horizontal welds of each ring being completed first and the vertical seam thereafter, as each successive ring was welded one upon the other. The entire job was executed by two welders, two helpers, two riggers and two common laborers in 10 full working days. As compared with the cost of a similar job by riveting it is interesting to note that the contract was awarded on price and in competition with others bidding on riveted construction. Also, it is within the writer's personal knowledge that the gross profit realized by the welding contractor was a fair percentage of the total contract price.

Another, and somewhat larger undertaking of this character, was a job recently completed for a large pipe line company in Ohio. This was the building of two gas-tight tanks of 1,000 barrels capacity each, 22 feet in diameter by 18 feet high, of quarter-inch plates (shells and bottoms) with three-sixteenths-inch roofs, complete with hatches, flanges, pipe connections and iron stairways, all welded by the oxy-acetylene process.

Problems Are Met

Because of lack of experience, the construction of these tanks presented a small number of problems, problems which on a similar undertaking would probably not occur a second time or cause a moment's concern. The difficulties encountered were largely due to unfamiliarity in

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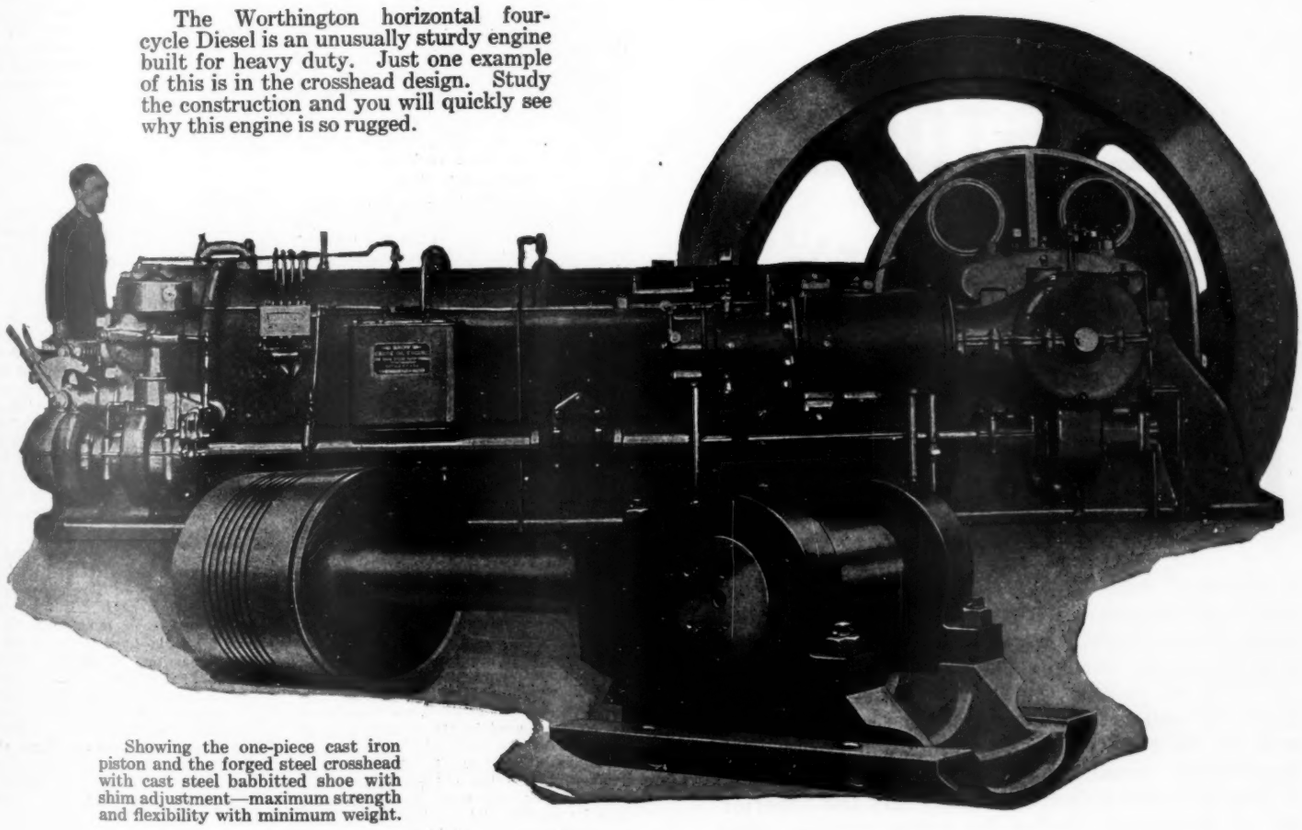

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for the expansion and contraction of plates and angles in welding. This much was definitely ascertained, however, that the welding of large field storage tanks is practicable and with experience can be done as economically as riveting.

And in this connection, one very significant fact to be noted is that the successful application of gas welding to tank construction is not limited to roof and bottoms. In joining the shell plates, both vertical and longitudinal seams, the oxy-acetylene process performs its own function in a most satisfactory and advantageous manner. Not only is this class of welding accomplished with greatest ease and economy, but when complete produces a joint as strong as the plates, which, of course, is impossible with riveted joints.

The completed product is so much more desirable than riveted construction that too close consideration of the first cost would not be justified even if in the early stages of the development of the welded tank it would be found to be somewhat more expensive.

Another recent step in the direction of that goal for which we are surely making, is the adoption during the present year by the American Welding Society of specification and recommendations for practice in the construction of tanks of 5,000 barrels capacity by oxy-acetylene welding. Copies may be had by communicating with the secretary at 33 West Thirty-ninth Street, New York City.

Exhaustive Tests

If you are wondering why these things have not been accomplished long ago, let me assure you that it is not the fault of the process itself. Quite exhaustive tests of welded joints recently conducted by the Bureau of Standards for the American Bureau of Welding at Washington, wherein a large number of welded tanks were subjected to bursting pressures, not only confirmed the claims of the gas welding fraternity but forever removed any doubt that a butt-welded joint, when properly executed, is at least 100 per cent efficient, with a little reinforcement can easily be made stronger than the parent metal. If decision is to be made on the basis of ultimate strength of joints, therefore, there would seem to be no choice except welding. The disparity in efficiency is much more pronounced when it is observed that a riveted joint invariably becomes leaky when subjected to stresses equivalent to only 25 per cent of its ultimate strength. In other words, so far as gas tightness is concerned, the most efficient style of riveted joint cannot be allowed a value of more than 25 per cent of the strength of the tank material —which would seem to account for the fact that approximately three-fourths of the material used in the construction of shells of tanks erected in the field nowadays is excess weight. Perhaps it is justified. Here the old proverb of the chain applies. A tank is no stronger than its weakest joint. But, as welding is increasingly applied in this particular field, it is safe to assume that the tendency toward excessively heavy materials will be reversed. Lighter materials will be found to be adequate with welded construction and resultant economies will be effected.

And why not? There is nothing impracticable in the idea, nothing radical in the suggestion. If we but let our minds believe what our eyes cannot fail to perceive, if we permit them to encompass on a large scale what is within our experience on a smaller scale, then all-welded tank forms are only a matter of time and man's faith and ingenuity. The only reason it is not already an accomplished fact is that the first 80,000-barrel all-welded tank has not so far been attempted.

Someone at no distant day is going to undertake it; someone whose convictions are not to be shaken by opposition nor courage daunted by disappointment. Doubtless the first attempt will be attended with some difficulties, but these will readily be surmounted by and with the engineering assistance of the large manufacturers of welding equipment and gases.

Certain it is that the first large riveted tank kicked up some dust of its own particular brand. But eventually, the all-welded tank of 35,000 to 80,000 barrels capacity will be an accomplished fact.

PETROLEUM TECHNOLOGISTS DEBATE ROTARY

(Continued from Page 36)

muddy fluid passing through one well to another, the particular remarks of Mr. Hunter referred to fields which were more or less exhausted. In California the oil sand came up 30 to 35 per cent. and with such a production of sand with the oil there were enormous fissures or channels through which the oil traveled. Crude oil itself was very extensively used for shutting off, and, in fact, was so recommended for use in the old fields which were approaching exhaustion.

With regard to core sands, when he was last in California he saw a core removed from about a foot of oil bearing sand and then there was a space of about nine inches in which the sand showed absolutely no oil, afterwards continuing for some distance with oil showing. By the use of the core barrel and the hoist, the actual determination of the oil bearing in that sand could be made. One could determine practically where the proper strata were and also the tapering of the formation to a very fine point.

In passing through any formation with a rotary one has first of all to consider the static pressure. In two counties in southern Oklahoma the wells were drilled so as to shut off what were known as artesian flows. That was true in other parts of the Mississippi Valley. In fact, sands carrying a capacity of 80,000,000 feet of gas per day were brought under absolute control, and the moment the bit entered the water sand the first indication one had was a thinning of the mud. The principle of rotary drilling, of course, was that the formation which was drilled was displaced and the material drilled must come out. Whether it was water, oil or gas it would be found in an emulsified condition appearing immediately in the circulating fluid.

In "wildcat formation it was well to have someone watching the drillers, for the question of the human element came in here very largely. It was for the man in charge, the moment the drill passed from the hard strata, to ask himself the question: What was in that formation? If it was clay it did not matter, but the moment he got into sand the practised man knew by the "tune" of the rotary exactly what he was in for if he had had any previous experience at all. With the use of the core barrel and a dependable human element, the rotary was possible under almost any conditions.

CALIFORNIA FIELDS

(Continued from Page 42)

the last well brought in during the week his No. 2 Buster Keaton being credited with an initial output of 985 bbls. The production is clean and tests 25.9 degrees.

Santa Fe Springs

There doesn't seem to be any let up in the decline which has been taking place at Santa Fe Springs for several months. There was nothing of particular importance to record in this field except a few small completions, the most interesting being the Mohawk Oil Co.'s No. 4 Batson. This well was drilled direct to the Bell zone and finished with a 4¼-inch oil string landed on bottom at 3,960 feet and, although only a 250-bbl. producer was secured it was a satisfactory well.

The Associated Oil Co. is credited with the largest amount of new production and brought in the two biggest wells put on production. The company's two producers were Nos. 4 and 5 on the Clark

lease. The former, No. 4, was drilled to 4,631 feet and showed an initial production of 1,650 bbls. a day of 34.1 gravity oil, which showed a cut of 1½ per cent. Number 5 Clark was drilled to 4,651 feet and registered a daily production of 996 bbls. of 34.2 gravity oil which showed a cut of 3½ per cent. Both wells, finished with 6¼-inch oil strings landed on bottom, are flowing through ⅞-inch beans, the former under a pressure of 415 pounds and the latter under a pressure of 320 pounds.

The General Petroleum Co. also completed two wells but one proved very unsatisfactory. The company's No. 85-A Santa Fe was finished at 4,700 feet and showed an initial output of 200 bbls. Both the quantity and quality of the production from this new well were unsatisfactory as the gravity of the oil is only 28.8 degrees and it shows a cut of nearly 20 per cent. The General Petroleum had a little better luck with No. 68-A Santa Fe Springs, completed at 4,641 feet. It was finished with a 4½-inch oil string and when put on production flowed 576 bbls. of clean 33.4 gravity oil during the first day.

The Commodore Oil Co., organized by the Machris Brothers, who control the Wilshire Oil Co., completed No. 2 Land, after drilling it to 4,680 feet, but only secured a small pumper. The output, 100 bbls. a day, is clean and tests 34.1 degrees.

Both the Standard Oil Co. and the Union Oil Co. put a well on production, although the former's No. 5 Helper was much larger than the latter's No. 17 Bell. Number 5 Helper, which was drilled to 4,655 feet and finished with a 4½-inch oil string landed at 4,643 feet, responded after being swabbed for several hours with an initial flow of 852 bbls. This output, during the first 24 hours, tested 32.8 degrees and showed a cut of 2 per cent. The company's No. 1 W. L. Houghton is making hole at 5,235 feet and this line well, which would have extended the western limits of the field, is still carried in the doubtful column. It has not shown any encouragement to date and, although the company is drilling a second well on this lease and two others nearby, it is not believed any of them will secure commercial production.

The Union's new well, No. 17 Bell, was finished at 4,649 feet and although only a small well was secured it gives evidence of increasing somewhat after it has flowed for a few days. About 25 per cent of the initial production of 225 bbls. was emulsion, but since the cut has already been reduced to 9 per cent, it is believed it will show still further improvement. The bringing in of this well completes the present drilling program of the Union on its Bell lease and, with the exception of No. 1 being deepened from the Bell to the Meyer zone, there is no drilling being done at present, the other 23 wells on this lease being on production.

Huntington Beach

Only a limited amount of development work is being done at Huntington Beach and as a result the weekly completions are few. The current week there were only four wells put on production with an aggregate initial output of 770 bbls. By a strange coincidence there were two new 135-bbl. wells brought in. The first was the Ryan Petroleum Co.'s No. 1, drilled to 4,450 feet and finished with a 4½-inch oil string. The production, which is being pumped, tests 18.1 degrees and shows a cut of one-half of 1 per cent. This well was followed by the Shell Oil Co.'s No. 6 Davenport, which produced the same amount of fluid, but over half of which was water. Number 6 Davenport was originally drilled to 5,087 feet and later plugged back to 4,930 feet after water was encountered. The oil is of a very low gravity, testing only 15.2 degrees. The Shell also completed No. 8 Ashton and secured a daily production of 200 bbls. The oil tests 22.3 degrees and shows a cut of 20 per cent. The last well brought in was the Federal Consolidated Oil Co.'s No. 1, finished at 3,502 feet. It showed an initial output of 300 bbls., the oil testing 23.4 degrees and showing a cut of 4 per cent.

Miscellaneous Drilling

There were no new developments at Rideout Heights in the old Whittier Field during the week, except a few lease transfers. The Julian Petroleum Corp. has leased several hundred acres in the vicinity of J. E. O'Donnell's No. 6 Whitely, which blew in a few weeks ago at the rate of 2,000 bbls. daily. It is reported that Julian has secured a 128-acre lease from A. H. Gregg, paying a bonus of $500 an acre. The property, which was leased on a one quarter royalty basis, adjoins O'Donnell's Whitely lease. Several years ago the Mascot Oil Co. drilled a well on it to 4,230 feet and abandoned it as a dry hole. There is a possibility that if the hole had been carried on down another 100 feet the company would have struck the same deep sand that O'Donnell encountered in his No. 6 Whitely. The latter well was brought in from 4,265 feet and, as the structure dips toward the old Mascot's No. 1 Gregg, it is believed that the latter was abandoned on top of the sand. O'Donnell has completely shut in No. 6 Whitely and will try to kill it in order to properly finish it. The Petroleum Midway Co. has also acquired several leases, actual possession being secured of the Smiley property of 18 acres.

The Standard Oil Co. is drilling its Anaheim wildcat, No. 1 Wagner, very slowly, in order that a careful check may be made of formation changes. The formation for some time has been a very hard sand and it is still present at 2,845 feet. The Oak Ridge Oil Co. is still battling with a water problem in its Bandini wildcat, No. 1 Rossi. The company has not been successful in cementing off the water with a 6¼-inch casing and will set a string of 4¾-inch at 4,669 feet. The Pan American is making hole in its El Segundo wildcat at 3,600 feet, the formation being a sandy brown shale. There have been no showings of importance to date.

The Amazon Drilling Co. has reached a depth of 6,660 feet in its test well at Inglewood and, although practically all hope of securing production has been abandoned, it will be carried on down as a deep test for future reference. The Petroleum Midway has secured a lease on the J. W. Neal property midway between Norwalk and Buena Park and will test out the area. A rig has been erected and active drilling will be well under way within the next week or 10 days. The St. Helens Petroleum Co. has abandoned its No. 1 Garnier in the San Jose Hills after drilling it to 5,268 feet. The well never showed any encouragement and its abandonment will probably result in the suspension of several others being drilled nearby.

The Snowolene Oil Co. has announced that another attempt will be made to secure production on Jacalitos Dome near Coalinga. The company's first hole, which seemed to be located very favorably, was lost at 3,640 feet as the result of an unsuccessful fishing job. The old Salt Lake Field which has been producing crude for many years will soon be replaced with residences, if the present intention of the officials of the Rancho La Brea Oil Co. are carried out. The Rancho La Brea Oil Co. contemplates the abandonment of some 150 wells, which are capable of producing about 50 bbls. each per day, in order that the property may be subdivided. The old Salt Lake Field is now entirely surrounded by choice homes and it will not be very long until nearly all the former producers have been abandoned. Many derricks in the old Los Angeles Field have been removed and it is now really difficult to find the location of former producers, residences having replaced the derricks. In several cases the derricks have been allowed to stand and the output from these small wells is delivered direct to nearby apartment houses for consumption.

Oil field operations reported to the

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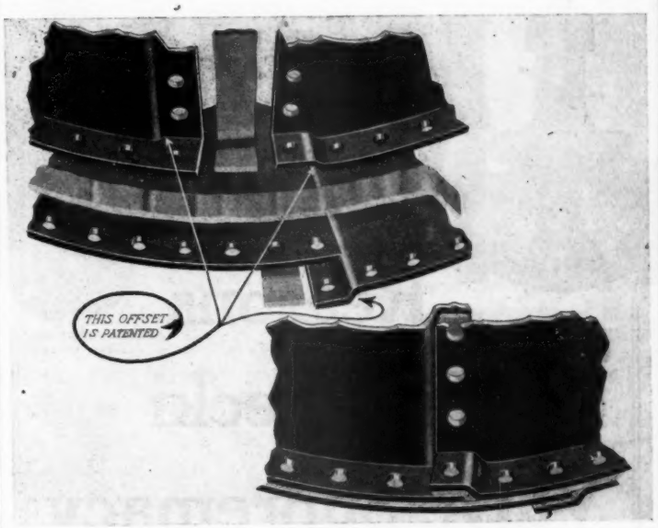

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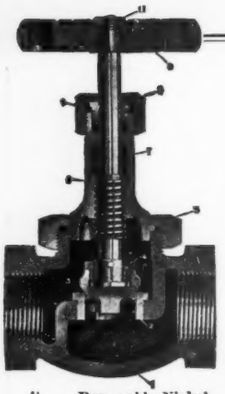

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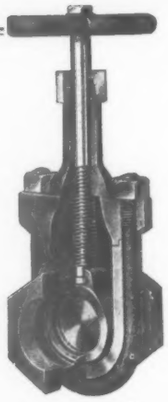

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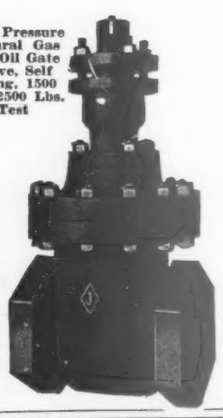

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JARECKI

State Oil and Gas Supervisor show 23 new wells started, the same as during the previous week. This is a total for the current year to date of 1,400, compared with 1,439 at the same date last year. Permits were issued for the following new wells:

Torrance

Location, company and well—
23-4-14 Bush-Voorhis Oil Co., 4.
Geo. F. Getty—
14-4-14 Torrance, 16.
Security Oil Synd. No. 2—
23-4-14 Easom, 1.
Sentinel Oil Co.—
24-4-14 Joughin, 2.
23-4-14 Southern Cal. Drilling Co., 2.
23-4-14 Southern Cal. Drilling Co., 3.
Shell Co.—
21-4-14 March, 1.
Shell Co.—
13-4-14 March, 2.
Standard Oil Co.—
8-4-14 Kirk Com., 5.
23-4-14 United States Royalties Co., 13.
14-4-14 Van Allen Oil Co., 3.

Santa Fe Springs

General Pet. Corp.—
5-3-11 Santa Fe, 17.
5-3-11 Santa Fe, 18.
5-3-11 Santa Fe, 19.
5-3-11 Santa Fe, 37-A.

Huntington Beach

Central Oil Co. of L. A.—
2-6-11 Community, 3.

McKittrick

26-29-21 Cymric Oil Co., 3.

Wheeler Ridge

28-11-20 General Pet. Corp., 2.

CENTRAL WEST

(Continued from Page 50)

tion of Illinois will in time become an oil field. The field will not be continuous but will be found in small congested pools, similar to those developed some years ago through the central portion of the State and not like the old field extending from near Westefield on the north a distance of many miles south to the famous Bridgeport field of Lawrence County where some of the best-known producing sands, in numbers, were discovered in the years from 1904 up to the present. This was an almost continuous field for close on to 40 miles in length, but the fields found and those that will be found on the western border of the State will be more like the Sandoval, Centralia or other pools developed along the central portion.

The first pool of any significance found on the western edge of the State was to the south of East St. Louis some 40 or so miles, the oil reported to be found in the Trenton rock at a very shallow depth. This field is now pretty well defined and the theory was that no other pools would be found along the east river rim, but a survey of the Ava-Campbell Hill area of northwestern Jackson County, to the south of the Waterloo Field, shows others exist. The Ava Field was started in Jackson County, a short distance south of Ava, by a Mr. Husband, native of Jackson County, about October, 1907, or just when the famous Casey-Robinson-Bridgeport field was in its heyday of gushers. This first test is reported to have had a fairly good show of oil, which had it been in Kentucky would have been thoroughly tested and producing, for Kentucky operators are not looking for nor expecting gushers, but are satisfied with a rainbow showing.

Story of Ava Field

Shortly after the initial well was drilled an Oklahoman, H. J. Smith, drilled a well a mile north of the town of Ava, which came in a failure. Mr. Smith then drilled near the Mobile & Ohio Railroad, about midway between Ava and Campbell Hill, where oil was found in paying quantities, but the well became involved in litigation and was never operated. This was in 1909. During the same year another test was sunk south of Ava, which was also a duster. Work then lagged in the field until 1911 and 1912, when Burton Bros. drilled on the Fromeling farm, Section 11, Bradley Township, Jackson County, and struck a nice showing of both oil and gas, the well shooting oil over the derrick mast. According to the natives, the well was lost by deeper drilling where a flood of salt water was encountered. Two additional wells were drilled on this same farm, in which gas was found, this being the original gas strike of the area. For reasons unknown this firm left the field and no further work was done until 1915, when local capital drilled three wells, and good showings were found in each well. About 1917 I. C. Copley, a resident of Aurora, Ill., became interested in the field, and since then has kept development work moving along until it reached its present size and is now producing both oil and gas in commercial quantities. The real making of the field is due to the work of the Mid-Egypt Oil & Gas Co. and the few boosters that made their homes in Jackson County. During the past few years very little was known of the field, but a visit to the field by several well-known characters announced the day was near when Jackson County would become a prominent spot for development work. Dixment and other eastern oil men have already invaded the field and secured acreage, and would have done some drilling last fall but the low price of crude prohibited wildcatting. The early spring should see several companies enter the Ava Field.

When the Mid-Egypt Co. started operations it was for natural gas and not oil, as the company owns a gas line and was marketing the gas, but during the past year or so it found oil and now that the price of crude is advancing finds it has a double-barrel chance when drilling, and has a pipe line to convey the crude to a loading rack along the railroad at Ava.

The field, like other pooly fields, is of a spotted nature and a dry hole between good producers condemns only where the duster is found. The drilling of the Gerberding farm shows this to be true, for No. 5 when pumped is reported to do 10 barrels an hour. This is the last completion on that farm, although another is starting. No. 1 is a gas well and drilled in the summer of 1921; No. 2 was an oil well but was spoilt by salt water; No. 3 some 500 feet east of No. 2 was a dry hole, while the recent good well completed was close to the old No. 2 well.

Eastern Kentucky

The extreme cold weather has brought quiet in most all parts of Kentucky. Reports from Knott County, in the southeastern part of the State, is that Garver & Davis have drilled in a couple of nice gas wells on the Jack Shepard farm, while in Floyd County, C. A. Sears hit a nice gasser on the Standard Coal Co. lands.

In the South Weir Field of Johnson-Magoffin County, Hudson and Collins' No. 3 Hernando Crace farm, is reported at 4 bbls., and Oliver Jenkins has drilled in No. 11 Martha Conley for 4 bbls. The Carter Oil Co. is cleaning out No. 5 C. P. Lemaster farm, which is making a showing for an average pumper.

In the North Weir Field of Lawrence-Johnson Counties, the Union Gas & Oil Co., the largest operating company in the pool, failed to report a completion for the week. The Cumberland Petroleum Co.'s No. 6 Sena Hamilton in the Ayersville area, is reported at 10 bbls. and the Indian-Tex Petroleum Co.'s No. 7 G. C. Gillam No. 2 farm, reported at 20 bbls. The Union Gas & Oil Co. is drilling No. 7 Parish Sparks, and the Cumberland Petroleum Co. drilling No. 7 Sena Hamilton farm.

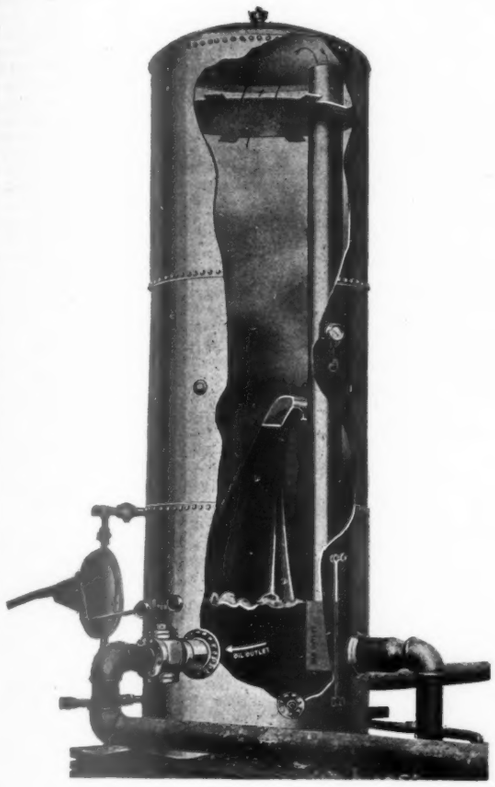
KANSAS FIELDS

(Continued from Page 46)

having been drilled 1½ feet deeper into lime.

T. B. Slick's No. 6 Olson, CNL NE SE, Section 1-35-7, was shut down at 3,705 feet. The Twin State Oil Co.'s No. 1 Hilbert, SE cor. NW, Section 6-32-5, was also shut down at 2,356 feet. The Gypsy Oil Co.'s No. 2 Jyson, CNL SW SW, Section 11-30-4, was making 50 bbls. after a 30-quart shot in sand at 2,761-73 feet, but was not completed.

In Sumner County, Brady Bros. had a hole full of water at 3,646 feet in their No. 1 Turpin, SW cor. Section 12-33-2, and were shut down. A rig was in place for a test by Collins & Frantz in the SE cor. NE, Section 33-32-2. The Champlin Refining Co. was still fishing for the bailer in its No. 1 Hitchcock, NW



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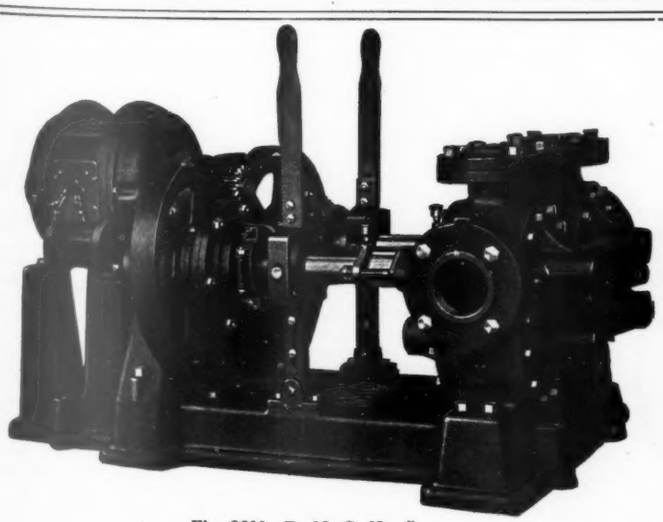

Fig. 3600—D. M. C. No. 5

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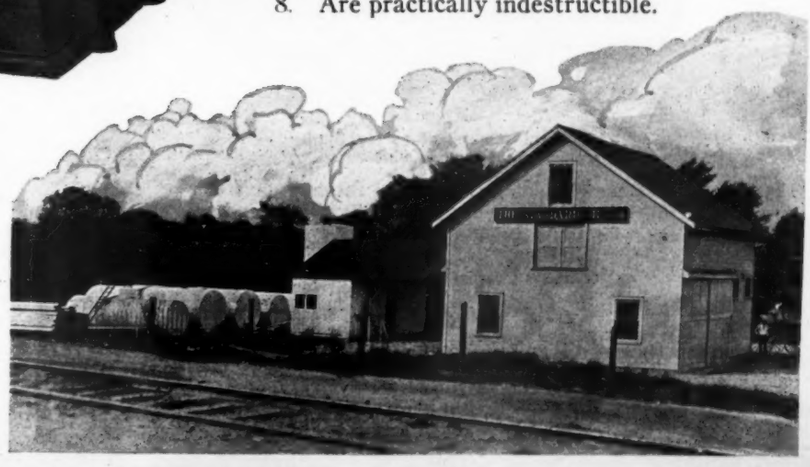

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(Revised Edition)

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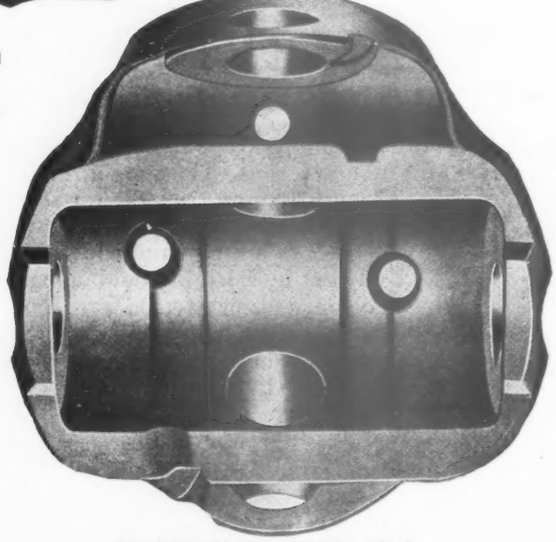
Above—Openings in end of bit head through which the slush is forced into the bearings.



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NE, Section 16-30-1w, carrying a hole full of oil.

Butler County

In Butler County, Faulders & Merriman abandoned their No. 1 Burton, NW cor. SE, Section 10-27-3, as dry at 3,394 feet. Connell and others had a rig in place and were rigging up their No. 13 Opperman, SW cor. NE NE, Section 7-26-5.

Shawver & Sutter shot their No. 2 Craig, SW cor. Section 23-28-5, with 20 quarts in sand at 2,835-40 feet and it responded with 15 bbls. production. A little oil was also encountered in this well at 2,804-09 feet. Rick and others abandoned as dry at 1,115 feet, their No. 2 Brewer, SW cor. SE SW, Section 23-28-7. Mayer and others' No. 1 Hazlett, SW cor. Section 12-23-7, was fishing at 2,875 feet.

In Morris County, Fisher and others' No. 1 Chase, SW cor. NE, Section 17-17-9, was dry and abandoned at 3,012 feet.

In Russell County, Patton and others had a rig up for a wildcat test in their No. 1, CWL SW SW NE, Section 4-13-15w.

In Marion County, rigs were on the ground for tests by Chester Grow and others in their No. 1 Schroeder, NE cor. SW NW, Section 2-21-5, and by Chris Sheedy in his No. 1 Hart, SE cor. NW NW, Section 33-21-5. A rig was in place for Wentworth and others' No. 1 Sauble, NE cor. NW, Section 14-21-5.

In Harvey County, the Newton Oil Corp. had a small show of oil in its No. 2 Wetschenski, SW cor. NE SW NE, Section 4-23-2 from sand at 2,452-54 feet, and a hole full of oil at 2,491 feet. It was underreaming the 6-inch casing.

Mason and others' No. 1 Hawk, NW cor. SE, Section 4-23-2, was making 250 bbls. on the pump from sand at 2,440-41½ feet.

WILDCATS IN NEW MEXICO COVER MUCH TERRITORY

(Continued from Page 38)

pacity of the thin structures is tested probably no arrangements for oil transportation will be made. There is a possibility that the shallow sand may be short-lived and that the wells will soon go to water.

"Interest in structures on public lands east of the reservation is about as high as in reservation structures, particularly in the Coal Creek area, and I look for intensive development of that area during the spring and summer. While Oklahomans are scattered over all of that country, the leadership in development will be taken by California and Wyoming operators. Four distinct gas sands have been found north of Farmington and Aztec, the most productive being in the mountains. This well at between 2,300 and 2,400 feet makes over 80,000,000 feet of gas. Near Aztec is a sand at 1,000 feet that makes commercial gas and an extraction plant is being installed there."

Mr. Phillips reveals the reason why the Midwest Refining Co. put a ban on selling oil from its well for use in motor cars, an oil of 62 gravity that was better than gasoline for operating motors. It was because of an objection made by the Continental Oil Co., a distributor in that territory of Midwest refined products.

"Even in the middle of winter a mild boom is under way at Farmington," says Mr. Phillips. "Hotels and rooming houses are filled, many improvements are going on and real estate is moving at good values. John W. Ingram, of Tulsa, was among the heavy realty purchasers of the fall. It is said he invested about $25,000 in town lots. Farmington is a modern little town situated in an irrigated valley, and living prices are moderate."

EXPECT MORE BUSINESS

KANSAS CITY, Mo., Jan. 7. — The Acme Petroleum Co., of Chicago and Kansas City, has added several salesmen in the last fortnight in anticipation of increased business.

WYOMING FIELDS

(Continued from Page 50)

up on some of their tracts and, therefore, do not want to see any further drilling done by their neighbors.

The E. T. Williams Oil Co. had 20 producers on its tracts in the southern part of the Salt Creek Field and no room for any more well unless drilling is done to crowd the present producers, therefore, the E. T. Williams Oil Co. is considered well satisfied with present conditions while the adjoining leases to the Williams lands are owned by the Prairie interests (Kasoming Oil Co.) and there is room for several wells on the Prairie tracts that would probably draw oil from the Williams. The Prairie Oil & Gas Co. is not a member of the Salt Creek Producers' Association, but it is expected to become a member shortly, for with the control of the Producers & Refiners and also the Kasoming interests, the Prairie will become a large factor in Salt Creek operations.

Wellington Quiet

The Wellington district in Colorado is quiet. The Union Oil Co. is laying a fuel line from the big gasser to a location for the second test on the structure and reports from Denver state that the Union is planning to float a bond issue to take care of the financial needs of a large drilling campaign.

At a meeting of the Rocky Mountain Association of Petroleum Engineers in Denver, the Wellington gasser came up for discussion as to its producing sands. Heretofore, the geologists have held to statements to the press, that the well is producing from the Frontier horizons, but geologists from the Ohio Oil Co. and the Midwest Refining Co. advanced theories that the gas is coming from the Muddy sand which lies above the Dakota and below the Frontier. The new supposition appears to be well founded and worthy of consideration. The Wellington gasser correlates with the logs of wells in the Rock River Field in southern Wyoming where the Ohio Oil Co. is producing from the Muddy sand and also with the well drilled by the Cactus Petroleum Co. near Round Butte, Colorado, some years before the Wellington well was started. This Round Butte structure is easily discerned over a part, but it is rather small and also covered with overlay so that the Cactus supposed is much larger than it really was. The Cactus well was a duster. Round Butte is about 10 miles north of the Wellington gasser.

Mammoth to Drill Test

The Mammoth Oil Co. has notified several holders of tracts in the Wellington area that if the holders will pool their tracts, the Mammoth Oil Co. is prepared to drill a test on the area in the joint interests of all concerned.

Former Governor Shoup of Colorado is forming a company to drill a wildcat well near Johnstown on a new structure and promoters and promotions are rife in Denver to drill wells on structures all over the State the coming season.

Fort Collins, Colo., is sending a delegation of its business men to Casper to look over this city and take notes of the manner of running the city government in connection with the oil business. The Fort Collins people hope to see that city an oil metropolis like Casper.

In an effort to increase a showing of oil in shale in a well near Debeque, Colo., a shot has been ordered from Wyoming and the shooter is now on his way to Debeque. The well is being drilled by the Continental Oil Producing Co. and while it is possible to shoot wells in shale and increase production, the operation requires considerable skill on the part of the field superintendent in charge of the shot and also experience with wells being "slated" through the use of a shot in the shale. It is very easy to spoil a well completely by a shot in the shale.

Shale shots require a nearly dry mass while a sand or a sandy shale shot requires a water content in the sand around the shot so that the sand will not glaze with the heat of the explosion.

A wildcat is planned for the

Sage Creek country near Cody, Wyo., west of the Oregon Basin. The well is to be financed by local capital and is on what is termed a new structure in the foothills of the mountains east of the Shoshone Canyon. The section has not been selected, but the location will be in Township 52, Range 101.

The well of the Marine Oil Co., on the Sheldon Dome, that was cited in past reports as a dry hole, and which was used for obtaining water for the second well now drilling there, is making oil. This well found a showing of oil and gas in the upper Frontier sand (Wall Creek?) and then was drilled down to the underlying sands and found water. The well has continued to make some oil and lately this showing has increased as has gas pressure and it appears to be on the road to make a commercial producer. The gas pressure has gone up to 150 pounds and the well is making an average of 12 bbls daily of good grade oil, the water seems to be decreasing and some days the well makes oil only without any water. This area lies about 50 miles north of Riverton in Fremont County and a few miles west of the Maverick Springs Field.

The engineering department of the Producers & Refiners Corp., located at Casper, is to be moved to Denver, Colo., to be permanently located in the offices of the Producers & Refiners, at that city. This will take about seven employes from Casper to Denver. A field force will remain in Casper to carry on the work here.

The Athler Producing & Refining Co. with a capitalization of $10,000,000, has registered its incorporation with the Secretary of State at Cheyenne, Wyo., and will enter this State as an active oil company. The firm is incorporated under the laws of Delaware.

Wyoming Wildcats

The Osage Field in eastern Wyoming is looking up a little in spite of the cold weather. Two wildcats are drilling south of the field, one on the Holst ranch and the other on Fiddlers Creek. Both wells hope to find the Osage sands productive and extend the area of the field to the south. As the sands that produce oil at Osage outcrop just north of the field itself, there is no chance of an extension in that direction.

The Sinclair Wyoming Oil Co. is drilling at 1,000 feet on Section 19-46-63 on its old leasehold close to some of the large wells found on that property. The sand is expected about 1,400 feet.

The Moody Oil Co. drilling a well north of the Burlington Railroad found an artesian water flow that is coming out over the casing. This will benefit the operators and the town of Osage.

The Utah Oil & Refining Co.'s test on the Black Mountain Dome in the Big Horn Basin country is holding up with a production around 300 bbls. daily. This structure has an area estimated at 2,000 acres of available land that will be found productive. The oil is going into earthen storage for the present and the well will be pumped for 30 days to determine its producing capacity.

LaBarge Showing

A showing of oil that may make a commercial well in the Tertiary was struck in a well in the Big Piney or LaBarge Field in Lincoln County, the past week. The well was being drilled by Newlon and others in the field and found a sand lens at 480 feet that made about 4 bbls. daily when tested. This area is capable of producing high grade oil from about 1,500 feet but this is the first time oil was struck at shallow depth.

The wildcat drilling in the country south of Moneta, in Fremont County, by The Texas Co. on what is called the Dutton Basin Dome, is active. This well is 850 feet and in a red shale with nothing of importance showing yet. The Texas Co. is also cementing on its Goode No. 2 in the Lost Soldier Field.

Judge T. Blake Kennedy, sitting in the federal court at Cheyenne, refused a petition that he step down from the bench in the case of Henry Miller against the Midwest Refining Co. The judge stated the plea that he was biased was not proven and that he was fully competent to hear the case on its merits. The plaintiff, Henry Miller, claims a valuable tract lying in the Salt Creek Field through having purchased the claims of the original placer claim locators. As Judge Kennedy was formerly associated with lawyers now in the employ of the Midwest interests, the defendant stated he considered he could not obtain a fair trial and asked for a change of judges.

A special telegram from Great Falls reports that a fire destroyed the rig of the Sunburst Oil Co.'s new test on Section 3-33-1 in the Sunburst Field and caused a shut down of this well which is regarded as a very important test. It further stated that J. Weyerhauser was inspecting the field and was interested in the holdings of the Potlatch Oil Co.

Crude Runs

Salt Creek	125,350
Teapot	4,350
Big Muddy	3,875
Grass Creek	3,340
Elk Basin	1,250
Notches	n.d.
Greybull	125
Rock River	3,485
Lance Creek	2,850
Poison Spider	300
Osage	600
Hamilton Dome	530
Lander	465
Pilot Butte	85
Lost Soldier	7,400
Ferris	115
Cat Creek	4,635
Sunburst	500
Miscellaneous	675
Total	159,920

GULF COAST OUTPUT DROPS 121,727 BBLS.

HOUSTON, Tex., Jan. 5.—Gross production in the Gulf Coast pools and the light gravity fields of the southwest is estimated at 2,807,443 bbls. for the month of December compared with an estimate of 2,929,170 bbls. for November. This is a decrease of 121,727 bbls. for the last month of the year.

The Orange Pool fell off 74,679 bbls. from the November figures and the Hull Pool declined 58,265 bbls. West Columbia ranks just about as it did last month. Based on these estimates, the total gross production of the Coastal regions, the Somerset, Laredo and Milam County fields and miscellaneous sections will aggregate 40,516,711 bbls. for the year 1923.

Late in December credit balance prices were advanced 25 cents to $1.25 for Grade "A" and 90 cents and $1 for Grade "B."

The following table gives the estimated daily average and gross output for each district for December:

Estimated Gross Production by Districts

District—	Daily Av.	Gross Prod.
Batson	1,152	35,712
Blue Ridge	621	19,251
Barber Hill	352	16,912
Dayton	61	1,891
Damon Mound	1,995	61,845
Edgerly	371	11,561
Goose Creek	13,376	414,666
Humble	5,436	158,516
Hull	17,975	557,225
Jennings	686	21,266
Markham	101	3,131
Orange	14,731	446,661
Pierce Junction	799	24,769
Spindletop	856	26,536
Saratoga	1,770	59,870
Sour Lake	4,784	148,704
Somerset & P. Pintas	2,764	85,684
Vinton	5,794	169,614
Welsh & Anse La Bute	74	2,294
West Columbia	13,830	428,650
Miscellaneous	3,635	112,685
Total December	91,163	2,807,443
Total November	97,639	2,929,170
Difference	6,476	121,727

LEASES BRISTOW REFINERY

The Indian Oil Corp. of Tulsa has leased the refinery of the H. F. Wilcox Oil & Gas Co., located at Bristow, Okla. E. B. Mitchell is president of the Indian Oil Corp. and F. E. Grines treasurer. The refinery, previous to the new lease, was operated by the H. F. Wilcox Oil & Gas Co. of Tulsa largely as an experimental plant. The plant has a skimming capacity of approximately 1,000 barrels daily and is now operating near capacity.

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GOODYEAR

Refinery Statistics for Month of November, 1923

Compiled by W. C. Hill, Petroleum Economist

Gasoline output in November was 617,558,021 gallons, a daily average of 20,585,267 gallons. This was a decrease of 3.17 per cent from the October rate of production. Imports were 13,423,861 gallons, a decrease of about 33 per cent from the preceding month's figures. The total new supply (production plus imports) was 630,981,882 gallons, a daily average of 21,032,729 gallons which was a decrease of 3.98 per cent from the rate last month.

The indicated domestic consumption (sales for domestic consumption) during November, was 538,308,809 gallons, the daily rate being 17,943,627 gallons which is a decrease from the October rate amounting to 12.85 per cent. Exports (including shipments to Alaska, Hawaii, and Porto Rico) were 54,499,383 gallons, which was 37 per cent below the figure for last month. The total demand (both foreign and domestic sales) was 592,808,192 gallons during November or a daily rate of 19,760,273 gallons, which shows a decrease of 13.1 per cent from the preceding month. The new supply exceeded the total demand by 6.44 per cent. Refinery shipments were 579,384,331 gallons, a decrease of 12.59 per cent from the October daily rate of shipments.

Gasoline stocks November 30, were 985,046,373 gallons, an increase of about 38,000,000 gallons or 4.03 per cent during the month. Comparing with the statistics of a year ago, the current figures show (1) an increase of 11 per cent in the new supply, (2) an increase of 15 per cent in the total demand, and (3) an increase of 27 per cent in refinery stocks on the gallonage basis.

Kerosene output in November was 220,811,390 gallons, an increase over October production of nearly 30,000,000 gallons. Exports were about 5,000,000 gallons less than in the preceding month. Indicated domestic consumption (sales for domestic consumption) was about 8,000,000 gallons greater than last month, amounting in November to 132,283,823 gallons. Stocks at the end of November were 239,114,395 gallons, an increase of about 14,000,000 gallons.

Gas and fuel oils produced in November amounted to 1,057,931,617 gallons, about 12,000,000 gallons less than in October. Imports decreased about 1,000,000 gallons and exports declined nearly 24,000,000 gallons. Sales for domestic consumption were 918,644,119 gallons, a decrease of approximately 97,000,000 gallons. Stocks were 1,499,925,521 gallons on November 30, showing a gain during the month amounting to about 63,000,000 gallons.

The output of lubricants during November was 96,120,347 gallons, an increase over the preceding month of about 8,000,000 gallons. Exports declined over 3,000,000 gallons, amounting to 22,296,571 gallons. The sales for domestic consumption were 60,973,882 gallons, an increase of about 2,000,000 gallons. Stocks were 231,335,328 gallons, a gain of 13,000,000 gallons over the figures of the previous month.

There were 250 refineries reported to the Bureau of Mines as operating during November, with an aggregate daily crude oil capacity of 2,125,892 barrels. These plants were operating at 79 per cent of their aggregate capacity, running to stills a daily average of 1,678 766 barrels of crude oil which was an increase of 2.2 per cent over the October rate of runs to stills.

	Nov., 1923	Oct., 1923	Nov., 1922
Gasoline:			
Stocks first of month	946,872,683	972,704,832	723,594,[illegible]
Production	617,558,021	659,060,570	667,106,[illegible]
*Imports	13,423,861	20,001,431	917,[illegible]
*Exports	54,499,383	87,194,451	43,163,[illegible]
Indicated consumption	538,308,809	617,699,699	471,616,[illegible]
Stocks end of month	985,046,373	946,872,683	776,722,[illegible]
Kerosene:			
Stocks first of month	224,954,009	238,024,012	256,359,[illegible]
Production	220,811,390	191,346,325	234,430,[illegible]
*Imports	10,016	16,380	64,[illegible]
*Exports	74,377,197	79,977,081	77,174,[illegible]
Indicated consumption	132,283,823	124,455,627	155,70[illegible]
Stocks end of month	239,114,395	224,954,009	257,871,[illegible]
Gas and fuel oils:			
Stocks first of month	1,436,591,014	1,481,203,993	1,303,743,[illegible]
Production	1,057,931,617	1,069,800,191	891,486,[illegible]
*Imports	31,487,208	32,421,329	45,357,[illegible]
*†Exports	107,440,199	131,109,471	76,[illegible]
Indicated consumption	918,644,119	1,015,725,028	883,446,[illegible]
Stocks end of month	1,499,925,521	1,436,591,014	1,353,347,[illegible]
Lubricants:			
Stocks first of month	218,485,258	215,013,179	217,775,[illegible]
Production	96,120,347	88,003,033	89,276,[illegible]
*Imports	176	2,017	1,[illegible]
*Exports	22,296,571	25,590,021	27,914,[illegible]
Ind cated consumption	60,973,882	58,942,940	54,507,[illegible]
Stocks end of month	231,335,328	218,485,258	226,429,[illegible]

*From Bureau of Foreign and Domestic Commerce. Exports include shipments to Alaska, Hawaii and Porto Rico. †Does not include fuel or bunker oil laden on vessels engaged in foreign trade.

OUTPUT OF REFINERIES IN THE UNITED STATES DURING NOVEMBER, 1923

	East Coast (N. Y., Phila. and Balto.)	Pennsylvania, N. Y., E. Ohio and W. Va.	Ind. and Ill., W. Ohio, Ky. and Tenn.	Oklahoma and Kansas	Texas	Louisiana and Arkansas	Colorado and Wyoming	California	Total	Daily Average Nov. 1923	Daily Average Nov. 1922
Oils run to stills, bbls.:											
Domestic Crude	8,958,406	1,735,137	4,151,647	5,011,710	8,204,167	3,529,137	1,922,055	13,323,272	46,835,531	1,561,184	*.....
Foreign Crude	2,123,187	.....	.....	.....	746,819	658,441	.....	.....	3,528,447	117,615	*.....
Total Crude Oils	11,081,593	1,735,137	4,151,647	5,011,710	8,950,986	4,187,578	1,922,055	13,323,272	50,363,978	1,678,799	1,477,449
Domestic partly ref. (net)	199,819	57,838	.....	189,822	.....	.....	572,132	.....	†.....	.....	*.....
Foreign partly refined	327,687	.....	.....	.....	34,933	40,636	.....	.....	403,256	13,442	*.....
Casinghead Gasoline	21,596	6,043	34,089	133,759	106,128	27,580	45,480	99,712	474,387	15,813	*.....
Total other oils	549,102	63,881	34,089	323,581	141,061	68,216	617,612	99,712	877,643	29,255	157,[illegible]
Total oils run	11,630,695	1,799,018	4,185,736	5,335,291	9,092,047	4,255,794	2,539,667	13,422,984	51,241,621	1,708,054	1,631,[illegible]
Output of refineries:											
Gasoline, gals.	120,831,949	25,446,806	79,460,943	88,311,593	110,751,916	39,172,048	47,387,039	106,195,727	617,558,021	20,585,267	18,903,[illegible]
Kerosene, gals.	61,689,160	11,741,508	18,756,943	25,440,681	46,821,896	29,366,152	9,053,460	17,941,590	220,811,390	7,360,380	7,814,[illegible]
Gas and Fuel Oils, gals.	228,163,450	15,655,111	53,592,370	92,972,558	173,307,003	70,985,117	43,669,050	379,586,958	1,057,931,617	35,264,387	29,719,[illegible]
Lubricants, gals.	29,939,598	15,756,679	8,285,183	6,268,836	23,646,076	2,952,473	1,293,042	7,978,460	96,120,347	3,204,012	2,975,[illegible]
Wax, pounds	16,654,724	6,157,268	2,862,990	3,941,063	4,823,633	3,289,343	1,546,026	27,566	39,302,613	1,310,087	1,361,[illegible]
Coke, tons	14,386	1,435	15,373	2,088	10,619	8,040	5,890	.....	57,831	1,928	1,[illegible]
Asphalt, tons	89,193	284	11,184	.....	29,586	32,960	1,348	38,842	203,397	6,780	5,[illegible]
Other finished products, gals.	2,340,995	837,186	3,195,586	369,255	.....	1,692,737	7,376	4,883,604	13,326,739	444,225	*.....
Losses, bbls.	461,500	112,868	102,210	226,892	376,028	90,189	71,960	185,087	1,626,734	54,224	53,[illegible]
Net production of partly refined products, gals.	.....	.....	1,069,656	.....	2,084,418	21,056,952	.....	30,340,353	†11,727,717	390,924	*.....

*Not available prior to 1923. †The net balance shows a net excess production over runs to stills of domestic partly refined oils.

STOCKS AT REFINERIES IN THE UNITED STATES NOVEMBER 30, 1923

	East Coast (N. Y., Phila. and Balto.)	Pennsylvania, N. Y., E. Ohio and W. Va.	Ind. and Ill. W. Ohio, Ky. and Tenn.	Oklahoma and Kansas	Texas	Louisiana and Arkansas	Colorado and Wyoming	California	Total Stocks Nov. 30, 1923	Total Stocks Nov. 30, 1922
Crude Oil and Partly Refined Products, bbls.:										
Domestic Crude	6,321,066	1,302,090	1,423,246	4,963,649	4,812,906	4,160,495	972,068	6,197,630	30,153,150	*.....
Foreign Crude	1,272,844	.....	.....	.....	413,435	1,172,576	.....	.....	2,858,855	*.....
Total Crude Oils	7,593,910	1,302,090	1,423,246	4,963,649	5,226,341	5,333,071	972,068	6,197,630	33,012,005	33,766,[illegible]
Domestic partly refined	4,917,966	670,752	1,849,118	1,559,132	5,314,981	2,969,741	1,850,602	11,826,292	30,957,584	*.....
Foreign partly refined	132,199	.....	.....	.....	50	45,961	.....	.....	191,220	*.....
Total other oils	5,050,165	670,752	1,849,118	1,559,132	5,315,041	3,018,702	1,850,602	11,826,292	31,138,804	1,366,[illegible]
Total Oils to be run	12,644,075	1,972,842	3,272,364	6,522,781	10,541,382	8,351,773	2,822,670	18,022,922	64,150,809	33,990,[illegible]
Finished Products:										
Gasoline, gals.	218,172,420	21,357,693	105,082,888	136,857,389	127,332,622	99,461,415	102,329,927	174,452,019	985,046,373	776,722,[illegible]
Kerosene, gals.	64,381,539	12,597,308	39,995,241	17,109,946	44,920,756	30,806,377	5,325,184	23,978,044	239,114,395	257,871,[illegible]
Gas and Fuel Oils, gals.	293,054,349	35,439,174	45,161,961	90,344,907	342,755,506	63,608,978	30,057,682	599,502,964	1,499,925,521	1,353,347,[illegible]
Lubricants, gals.	98,829,043	30,361,965	22,090,216	13,007,525	45,934,418	2,935,614	5,759,288	12,417,259	231,335,328	226,429,[illegible]
Wax, pounds	57,918,103	24,063,894	30,634,796	3,313,108	8,999,352	37,912,886	4,442,985	196,323	167,481,447	202,004,[illegible]
Coke, tons	4,813	109	5,200	3,462	898	120	3,367	.....	16,969	22,[illegible]
Asphalt, tons	57,067	2,643	10,973	188	11,283	12,036	2,491	13,674	110,355	110,[illegible]
All other finished products, gals.	4,598,115	1,444,556	17,247,649	4,431,846	84,882	1,189,018	479,234	246,341	29,721,641	*.....

*Not available prior to 1923.

OIL BURNER MAY SAVE INDUSTRY IF GASOLINE CONSUMPTION SHRINKS

(Continued from Page 19)

be made available by the opening of lines of transportation by land and sea.

While the gasoline industry has grown to enormous proportions in the past few years and is still developing at a rapid rate, there is no doubt but that it is now being confronted by a positive menace. Scientists, intensively studying the properties of gasoline and automotive fuels, promise discoveries which will prove more or less revolutionary in their effects. They are concentrating along the line of increasing the power obtained from these fuels. Their aim is to make one gallon of gasoline do the work of two, by the introduction of chemical compounds or other explosives. Should they succeed in this ratio, it would mean a loss of the marketing of one-half of the present output of gasoline, or an annual shrinkage of more than 3,000,000 gallons based on the market figures of 1923.

It is not at all improbable that such a discovery may be announced at any time. Add to this the danger growing out of the progress in research work of the automotive engineers toward improving the internal combusion engine. At the recent annual meeting of the American Petroleum Institute in St. Louis, in one of the addresses the startling statement was made that the internal combustion engine of today is only 5 per cent efficient. This leaves a margin of 95 per cent on which to improve. Research work is now being done in the automobile industry and is producing remarkable results. We must realize that not only is substantial progress being made in the world of science, but in the realm of mechanics as well. Preparations therefore should be made to meet the changed conditions of tomorrow.

As an illustration of possibilities, announcement has just recently been made of the wonderful discovery of Doctor Christie at Johns Hopkins University, whereby a ton of coal being ground to a powder, reducing the particles to the size of two one-thousands of an inch in diameter, will do the work of two tons of coal. And the grinding is done at the insignificant cost of 50 cents a ton.

Great Possibilities

The great possibilities in the field of study of automotive fuels has attracted the attention of hundreds of scientists the world over. They are now assiduously working on the problems involved. Should the day come when, through the evolution of experiment and successful discoveries in this direction, the great markets for gasoline would be seriously curtailed, it seems but logical that the field of fuel oil would prove its one and only substitute.

There is no other unexploited element in petroleum for which there is a similar world-wide need. As a safeguard for the maintenance and stability of future markets, the industry should do everything in its power to promote the development of the household fuel oil burner.

After all, if we stop but for a moment to think, it was upon the humble and inexpensive little kerosene burner in the common household that the great oil business was literally founded and extended to the four corners of the earth. With these reflections, it is not difficult to sense the possibility that the domestic fuel oil burner may some day develop into one of the mainstays of the great petroleum industry.

Say you saw it in The Oil and Gas Journal.

Oil Men Will Pay Obregon but Rebels Hold Tuxpam Wells

NEW YORK, Jan. 8.—Instructions were dispatched Tuesday to representatives of American oil companies in Mexico directing the method to be followed in paying the Mexican oil production taxes due on Thursday.

While the Association of Producers of Petroleum in Mexico, which forwarded the instructions, declined to disclose their nature, because of the "ticklish situation in Mexico" it was understood all payments would be made to the Obregon Government and no notice would be taken at this time of the decree of Adolfo de la Huerta, revolutionary leader, that the taxes be paid to him.

Officials of the Pan-American Petroleum & Transport Co. expressed no concern over the shutting down, by direction of the Mexican rebels, of the company's wells and pipe lines in two fields near Tuxpam, comprising about 25 per cent of the corporation's Mexican production of 100,000 barrels daily.

It was pointed out that no fear need be felt as to the revolutionary forces damaging the property and that plenty of petroleum is available in storage to prevent possible delay to deliveries.

While suspension of the Vera Cruz cable cut off communication from that point, oil circles continued to receive messages from Tampico.

Conflicting reports as to which side had possession of Tuxpam were received in news dispatches but in oil circles it was believed the revolutionary forces still retained control of that port.

One report given credence in oil circles, stated that the revolutionary forces, operating from Tuxpam had advanced north to Potrero and had taken possession of the oil fields of the Aguila company's subsidiary of the Royal Dutch Co. That company's wells and pipes, like those of the Pan-American company, were immediately shut down, it was understood.

Oil men explained that the rebels ordered the wells and pipe lines closed down as they came into possession of them in order to shut off further shipments pending an understanding that the taxes would be paid to them and not to the Obregon Government.

DEATH OF F. E. WATKINS

Fred E. Watkins, a pioneer oil operator of the Healdton Field and vice president and general manager of the Iowa Oil & Refining Co., died at his home in Waurika, Okla., at the age of 64. He was a native of Iowa and was attracted to Oklahoma by sales of Chickasaw and Choctaw lands and in 15 years accumulated several thousand acres in Jefferson, Carter, Stephens and Love Counties. Milo D. Watkins, a son, is secretary of the Iowa Oil & Refining Co. and manager of its Healdton office. A daughter, Mrs. Bolton J. Love, lives at Easton, Pa.

SCHOOL LAND FOR LEASE

OKLAHOMA CITY, Okla., Jan. 7.—Four tracts of State school land, comprising 438 acres of the original four quarters of Section 13-20-9, Pawnee County, are to be offered for oil and gas lease on February by the commissioners of the Land Office. On February 12 the commissioners will offer for lease the southeast quarter of Section 3-27n-1e, Kay County.

GET YOUR SHARE

Apparently 1924 is going to be a record breaking year in the oil industry.

All organizations in the industry will need men, equipment, leases, etc., to carry out their big plans for the year 1924.

If you have any equipment or leases to sell or if you are in need of a position, mail your Classified Advertisement today in order to get your share of the 1924 prosperity.

CRUDE ADVANCE AID TO REFINED MARKET

(Continued from Page 22)

were not willing to quite meet the prices of the refiners but they were generally only ¼ to ½ cent under. Among these buyers were the Carson Petroleum Co., the Sinclair Refining Co., and the Pierce Oil Corp. The Sinclair company was in the market for 64-66, 375 gasoline for export, as was the Carson Petroleum Co. It is understood that neither company was able to purchase any large quantities in Group 3, although the latter company offered as high as 11½ cents. The highest offer of the Sinclair company is understood to have been 11¼ cents. The Pierce Oil Corp. was reported to have been in the market for 150 cars of New Navy, offering 9¼ cents. The export market has not advanced enough so that the export buyers could pay 11¼ cents basis of Group 3 for 64-66 375, but the fact that the Carson and Sinclair companies were willing to offer that amount was interpreted as concrete evidence that an advancing export market is anticipated.

The movement of gasolines was practically the same as last week. Buyers are slow in accepting the higher prices, but in many cases are forced to make small purchases. Neither the buyers nor sellers are in the frame of mind to deal for future delivery and practically all business is confined to immediate shipments. Refiners are taking care of their regular customers but are apparently willing to keep their prices high enough so that they do not sell except to this trade. Naphtha and 60-62, 400 grade gasoline continued almost unobtainable in Group 3 during the past week.

Kerosene and Distillates

The distillate demand, as has previously been explained, was strong and prices were advanced. There was also an improvement in the demand for kerosene and prices are from ⅛ to ¼ cent higher than last week on all grades. The distillate and kerosene shipments of some plants during the past week exceeded their gasoline total. Cold weather is expected to continue to create a demand which exceeds the supply of these two products and still higher prices are expected by many of the trade.

Natural Gasolines and Blends

All grades of natural gasolines and blends advanced from ¼ to 1½ cents. Several natural gasoline manufacturers are sold up over the balance of the month. Others state that they will store any excess material they have over current requirements. Due to the higher natural gasoline and naphtha prices blenders have been forced to again advance their prices. The cold weather in the northern part of the United States was reflected during the past week in a greater demand for the higher gravity gasolines. Most blenders state that inquiries exceed their supply several times. Some are receiving within ¼ cent of New Navy prices for the best grade of blends.

Fuel and Gas Oils

All grades of fuel oils advanced from 5 to 10 cents during the past week and gas oils are from ⅛ to ¼ cent higher than last week. These advances are not due to an exceptional demand but largely reflect the feeling that prices on all refined products are to advance. Stocks are not large and for that reason refiners are in a position to advance their prices regardless of sales. A little 24-26 fuel oil was available in sellers' cars at 95 cents, but in a large majority of cases refiners were asking $1 and $1.05, with some quotations still higher. No gas oil was available under 2¾ cents. The Prairie crude change, by advancing the marginal contract basis for fuel oil will give additional strength to the market on these two products.

Neutrals

Practically no steam refined material is available in this Group. There were numerous inquiries for these grades during the past week but buyers were unable to obtain immediate shipment regardless of offers. The demand for all grades is good and a general advance in all is to be expected in the near future.

Sixteen inspections for every link of chain

That drill bit hasn't a chance to break away.

Suspended on a Yale Spur-Geared Chain Block, one man easily handles the load with speed and safety.

A Yale Chain Block never lets go. It will hold indefinitely, lower the load smoothly with a slight pull on the hand chain, or hoist it quickly as the needs arise.

Yale Spur-Geared Chain Blocks are *safe blocks* for the dangerous and uncertain loads.

The Yale load chain is five times strong enough to support the rated load, and every link subjected to 16 inspections and tests during manufacture. The line of steel suspension members—hooks, chain, suspension plates, gears, pinion and load sheave—assures the greatest protection to the work, the block and the operator.

And the Yale load hook, so designed as to open gradually at several times the rated hoist capacity, is the "safety valve" for protection against careless or inexperienced usage.

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Chain Blocks, Electric Hoists — For Lifts
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YALE Hoisting and Conveying Systems

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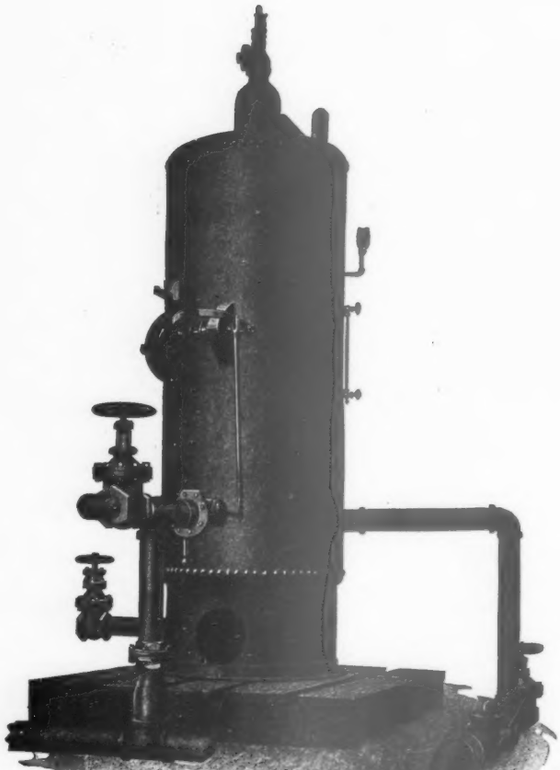

The Trumble Oil and Gas Separator keeps the gasoline in the oil by maintaining the gas under pressure when it is leaving the oil, which results in preventing it from expanding and increasing its capacity for carrying the gasoline.

Spreads the oil in a thin body so gas leaves it with the least possible obstruction.

The large spreading surface over which oil flows insures immediate escape of gas from oil and accounts for the Trumble capacity of the Trumble Trap.

Made in different designs to meet all requirements.

Increase your profits by saving the gasoline in your oil by using a Trumble Oil and Gas Separator.

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Eastern Representative:
C. F. CAMP, Box 289, TULSA, OKLAHOMA

OKLAHOMA FIELDS

(Continued from Page 40)

40 quarts in sand at 2,460-2,500 feet, and made 365 bbls. after the shooting. The first shot of 15 quarts 10 days before raised the production from 50 to 90 bbls. Their No. 5-C Endicott, CSL SW SW, same section, made 390 bbls. following a 100-quart shot in sand at 1,837-57 feet. A previous shot on December 20 raised the production in this well from 46 bbls. to 112 bbls.

There was little activity of any significance in the Burbank Field during the week. The Texas Co. had pipe and tools on the location for No. 3 Munroe, CWL NW SW SW, Section 3-27-5. The Roxana Petroleum Corp. was drilling at 1,450 feet in its No. 2 Pappan, SE cor. NE, Section 4-27-5. The Phillips Petroleum Co. had the 6-inch casing set at 2,750 feet in its No. 7 Taylor, CEL SE NE NW, Section 9-27-5. The 10-inch and 12-inch pipe had been pulled and the 15-inch was being taken out.

The Mid-Kansas Oil & Gas Co. was drilling by tools at 1,140 feet in its No. 4 Rhodes, CNL NE NW SE, Section 9-27-5. The Carter Oil Co. was also drilling by a string of tools in its No. 16, C SW NE NE, Section 22-27-5, at 1,120 feet. Peters and others had a rig built and were rigging up their No. 2, CEL NE SW NW, Section 17-27-6.

In the Osage

In the Osage, the Owen-Osage Oil Co. was spudding No. 272, CEL SW, Section 7-23-11, and was rigging up a machine for No. 271, in the CWL SE SW, Section 9-22-11. The Sand Springs Home was drilling at 280 feet in its No. 77, CSL SE NE NE, Section 2-21-8.

The Barnsdall Oil Co. was swabbing about 150 bbls. from the Wilcox sand at 1,907-10 feet in its No. 21, SE cor. NE NW, Section 9-20-12. The Tidal-Osage Oil Co. was building a rig for No. 1, SE cor. SW, Section 21-20-12, and the Peer Oil Corp. was also building a rig for its No. 4 in the Tulsa Country Club Pool, NE cor. NW, Section 28-20-12. Munn Bros. were erecting a rig for their No. 6, NW cor. NE, in the same section.

A rig was in process of erection for a No. 1 test by Gray and others, CNL NE NW, Section 23-22-8. The Owen-Osage Oil Co.'s No. 270, CWL NW NW NE, Section 4-27-10, was shut down at 400 feet. The Texas Co. was rigging up a machine for its No. 3, SE cor. NE, Section 29-28-5, and the Mutual Oil Co. had a rig built and was rigging up tools for its No. 3, NE cor. SE, Section 32-24-8.

The Pawhuska Petroleum Corp. was spudding its No. 7, CSL SE SW NW, Section 17-25-9, and C. B. Peters abandoned the rig on the location for his No. 15, SW cor. SE, Section 23-25-9.

Sam Sitrin topped the Bartlesville sand at 2,065 feet and shot it with 60 quarts from 2,100 feet to 2,116 feet, making a 25-bbl. producer out of his No. 21-A, C SW SW, Section 27-25-9.

A rig was in place and tools were being moved in for Clark and other's No. 2, CWL NE, Section 21-24-9. Peters and others were spudding No. 29, CNL NW, Section 13 23-8, and the Marland Refining Co. was moving in a rig for No. 6, CWL NW SE, Section 20-23-8. The same company was drilling at 400 feet in its No. 2, NW cor. NE, Section 29-23-8. The Red Bank Oil Co. was spudding No. 3, CEL NE NW, in the same section, and Thompson, Black and others had a rig on the ground for their No. 2, CNL NW NE, Section 29-22-8.

A shot of 100 quarts made a 60-bbl. producer out of C. B. Peters' No. 11, C SW SW, Section 4-23-9, the shot having been fired in the Bartlesville sand at 2,110-36 feet. First oil was struck at 2,075 feet. The Marland Refining Co. abandoned as dry at 2,392 feet its No. 9, NE cor. SE, Section 34-22-10. It was an old well. The Peer Oil Corp. was drilling at 400 feet in its No. 4, SE cor. NE NW, Section 19-22-11, and Zock & Barnes were at the same depth in their No. 1, NW cor. SE, Section 30-22-9. A rig was up for the Winona Oil Co.'s No. 1, NE cor. NW NE, Section 29-20-12.

The Indian Territory Illuminating Oil Co. shut in its No. 319, SE cor. NE, Section 39-24-11, for 1,500,000 feet of gas in sand at 895-928 feet. The Owen-Osage Oil Co. shut down its No. 267, CNL NW SE, Section 28-28-11, on top of the Mississippi lime at 1,797 feet. The same company abandoned its No. 264, NE cor. SW NE, Section 9-28-12, as dry at 1,670 feet.

Creek County

In Creek County, there were rigs on the ground for the Link Oil Co.'s No. 1 Hicks, SW cor. SE SW, Section 4-13-8, and for The Texas Co.'s No. 1 Samuels, NW cor. SW, Section 5-13-8.

The Nowata Oil Co. was swabbing 60 bbls. from sand topped at 2,983 feet, in its No. 3 Hendrickson, NW cor. NE NW, Section 21-16-9, after plugging back from 2,994 feet, where it ran into water, to 2,988 feet. The Transcontinental Oil Co. plugged its No. 1 Mitchell, SE cor. NE SW, Section 22-17-8, back to the Dutcher sand at 3,090-97 feet from a total depth of 3,550 feet, and swabbed 30 bbls. of 19 gravity oil. The Red Bank Oil Co. built a rig for its No. 6-A Meyer, SE cor. SW SW, Section 9-16-8, a twin to No. 6, and the Prairie Oil & Gas Co. was spudding No. 1 Deer, SW cor. NW NW, Section 19-17-9.

Several tests are in progress in northern Hughes County. The Papoose Oil Co.'s No. 1 Alexander, SW cor. SE, Section 4-9-9, was down 560 feet, and the Gilcrease Oil Co.'s No. 1 Simon, NE cor. NW, was drilling below 685 feet. The Papoose Oil Co.'s No. 1 Hill, NW cor. NE, Section 9-9-9, was at 190 feet. The Margay Oil Corp. spudded and shut down its No. 1 Brown, SE cor. SW SW, Section 17-9-9.

A test was drilling below 2,150 feet in Section 4-9-11, the Tidal-Osage Oil Co.'s No. 1 Baker, SE cor. SW SE, being at that depth. The Mid Kansas Oil & Gas Co. was swabbing 60 bbls. from sand at 2,981-86 feet in its No. 2 Bruner, SW cor. NE NE, Section 9-9-11.

The Turman Oil Co. was building a rig for its No. 1, SE cor. NW, Section 13-9-8, and the Dixie Oil Co. was spudding No. 1-A Irving, CWL NW SE SE, Section 18-8-10.

In southern Okfuskee County, C. H. Lebow was drilling his No. 2 Sevier, CSL NE SW SW, Section 6-10-10, at 450 feet. A rig was in place also for W. L. Umburn's No. 1, NE cor. NW, Section 3-10-11.

The Transcontinental Oil Co. abandoned its No. 1, NE cor. SW NW, Section 11-10-11, as dry at 2,605 feet. Fisher & Umburn took the rig down from the location for their No. 1 Cubbie, SE cor. NE NW, Section 29-10-11. The Howarth Oil Co.'s No. 1 Field, SE cor. SW NW, Section 1-11-8, made a 20-bbl. flow from sand at 3,328-35 feet and was shut down awaiting tankage. A show of oil was found previously in sand at 3,315-20 feet, and the 6-inch casing was set at 2,328 feet.

The Josey Oil Co. had a rig on the ground for No. 1 Carolina, NE cor. SE, Section 32-12-11, and the Aztec Oil Co. was drilling at 420 feet in its No. 4, CEL NW NW, Section 36-12-11. The North Baltimore Oil Co.'s old well, No. 5 Sugar, NW cor. NE, Section 13-12-11, was dry and abandoned at 2,701 feet.

A rig was on the ground for the Oklahoma Oil Co.'s No. 3 Barnett, SE cor. NE, Section 34-11-11. The Sinclair Oil & Gas Co. was drilling at 1,530 feet in its No. 1 Alexander, NE cor. NE, same section.

A 400-bbl. producer brought in by the Atlantic Oil Producing Co. in its No. 1 Jackson, NW cor. SW, Section 35-11-11, was at last reports making 200 bbls. from sand at 2,500 08 feet.

In Other Counties

A well that flowed 390 bbls. naturally was brought in by the Gladys Belle Oil Co. in southern Okmulgee County in its No. 3 Mitchell, SW cor. NW NW, Section 6-12-12. Sand was picked up first at 2,422-35 feet, and the second pay was found at 2,519-42 feet.

In Pawnee County, the Watchorn Oil & Gas Co.'s No. 8 Miller, SE cor. SW SW, Section 33-23-3e, an old well, was being rigged up to deepen at 2,723 feet.

The same company's No. 10 Miller, NE cor. SW, Section 33-23-3e, another old well, was making 60 bbls. naturally from sand at 2,674-90 feet. The rig on the same company's No. 1-A Brown, SW cor. NE, same section, was skidded 30 feet south and the new hole was drilling at 300 feet.

In Payne County, the Magnolia Petroleum Co. had a 225-bbl. producer from sand at 3,775-85 feet in its No. 4 Ballard, SE cor. NE NE, Section 33-19-4e, following a 25-quart shot.

Two important tests drilling in the northern part of Seminole County were the H. P. Wilcox Oil & Gas Co.'s No. 1 Bruner, NW cor. SE SW, Section 15-10-8, which was below 500 feet, and Holmes & Jarvis' No. 1 Harjo, NW cor. SW, Section 22-10-8, which was down 600 feet.

Southwest of Duncan, in Stephens County, Walter Gant was rigging up a rotary for his No. 3 Horde, CNL NE NE, Section 5-1n-8w. The Walker Valley's No. 1, NE cor. SW, in the same section, was dry and abandoned at 2,418 feet. Cable tools were being rigged up to drill deeper in the Magnolia Petroleum Co.'s old well, No. 1 Leonard, SE cor. NE, Section 6-1s-8w, at 2,318 feet. The Lone Star Gas Co. was rigging up a rotary for its No. 4 Prentice, SE cor. Section 18-1s-8w, and the McMan Oil Co. was drilling at 800 feet in its No. 15 School Land, CEL SE SE NW, Section 33-1s-8w. The Magnolia Petroleum Co. was running the 6-inch casing at 1,778 feet in its old well, No. 3 Edwards, CWL NW NW, Section 20-1s-8w.

In McIntosh County, H. P. Lee spudded and shut down his No. 1, SW cor. NE NW, Section 13-12-17, and Bynum and others abandoned as dry at 3,410 feet their No. 2 Dyer, NE cor. NW, Section 21-12-17.

A 2,000,000-foot gasser was brought in by the Wooster Oil Co. in its No. 3 Stand, NE cor. Section 17-11-14, from sand at 2,662-74 feet. Total depth was 3,510 feet. The same company's No. 1 McIntosh, C NW NE, Section 20-11-14, was shut down at 300 feet.

The Sayre district of Beckham County reported little of interest during the week. The hole was junked at 280 feet in Santrock & Curtiss' No. 1 Steadman, SW cor. SE NW, Section 14-9-23w, and the rig was skidded 52 feet south. Cable tools are being rigged up to make the new hole. Cravey and Caudell were drilling at 130 feet in their No. 1 Hickey, SE cor. NW SW, Section 20-9-23w, and the Carter Oil Co. at 520 feet in its No. 1 Windler, C SE NW NE, Section 31-9-23w.

In Greer County, a rig was in place for a test by White & DeBolt, in the SW cor. NE SW, Section 26-7-22w, on the Bowman farm.

The Peters Oil Co.'s No. 11, SW cor. Section 4-23-9, Osage County, found an oil sand at 2,075-92 feet, and another at 2,110 36 feet, which made 60 bbls. after a 10-quart shot.

In the northern part of Creek County, Mytch and others brought in a 180-bbl. producer in sand at 2,753-59 feet in their No. 1 Morgan, SW cor. SW NE, Section 15-19-9, a direct east offset to The Texas Co.'s producer, No. 1 Scott, in the SE cor. NW, same section.

The Anolu Petroleum Corp.'s No. 2 School Land, in the Otstot Pool, northwest of Blackwell, in Kay County, was making 14,500,000 feet of gas from sand at 3,440-50 feet. Location of this well is in the NE NE, Section 16-27-1w. In the same district, the Blackwell Oil & Gas Co. had a well good for 18,000,000 feet of gas in sand at 2,356-58 feet. It was the company's No. 2 Humphreys, in the NW SW, Section 10-27-1w, and will probably be drilled a foot or two deeper. The same company's No. 1 Humphreys, CSL SE NW SW, was brought in last July for 400 bbls. in sand at 330-43 feet.

In northern Kay County, Spencer and others' No. 1 Clink, NW cor. Section 21-29-1, was good for 5,000,000 feet of gas from sand at 2,015-17 feet. George Neere shut down his No. 1 Burk, SE cor. NW, Section 31-28-1, at 750 feet. The Blackwell Oil & Gas Co. had a rig in place for No. 1 Geiger, SE cor. NE, Section 9-27-1w.

In Tulsa County, C. W. Titus was spudding No. 2, NW cor. SE NE, Section 10-19-10, and the Nelson Oil & Gas Co. was also spudding its No. 2 Enriques, CNL SW NE, Section 15-19-10.

In Grant County, the Marland Refining Co. abandoned as dry at 3,816 feet its No. 1 Zeck, SW cor. NE, Section 7-28-3w.

In Creek County the Bu-Vi-Bar Oil Co. and the Carter Oil Co. were rigging up No. 1 Williams, CNL NE SE, Section 24-17-8. H. U. Bartlett's No. 1 Washington, NE cor. Section 19-18-9, was good for 1,250,000 feet of gas from sand at 2,630 55 feet. Holmes & Jarvis were drilling at 510 feet in their No. 1 West, NW cor. SE NW, Section 17-18-9. The Kiskaddon Oil Co.'s No. 1 Foster, NE cor. NW NW, Section 26-19-8, was good for 12 bbls. after an 80-quart shot in sand at 2,558-74 feet.

In western Cotton County, R. S. Carter has spudded a 3,500-foot test on the H. S. Griffin farm, SE Section 28-2s-13w. A rotary will be used.

Say you saw it in The Oil and Gas Journal.

Mexican Production Falls 18 Per Cent; Light 53 Per Cent

NEW YORK, Jan. 7.—Production of oil in Mexico in 1923 totaled 152,035,000 bbls. Light oil output was 63,987,000 bbls., or 42 per cent of the total, and heavy oil 88,048,000 bbls. Light oil production declined more than 53 per cent from 1922, when total was 138,734,502 bbls., or 75 per cent of entire Mexican oil output. Heavy oil output in 1923 almost doubled the 1922 total of 46,322,747 bbls. Decline of all oil output during 1923 was 33,022,249 bbls., or 18 per cent from total of 185,057,249 bbls. produced in 1922.

Production of light oil declined from 1,786,000 bbls. in week ended January 6, 1923, to 989,000 bbls. in the week ended December 29. Heavy oil output gained from 1,064,000 bbls. in the week ended January 6 to 1,944,000 bbls. in the week ended December 29. Approximate monthly output of light oil from the southern fields and heavy oil from the Panuco field, and the combined total, compiled from weekly estimates, is shown below, in barrels:

	South (Light)	Panuco (Heavy)	Total
January	6,832,000	4,577,000	11,409,000
February ...	6,472,000	5,088,000	11,560,000
March	6,884,000	6,694,000	13,578,000
April	5,217,000	6,002,000	11,219,000
May	4,990,000	6,761,000	11,751,000
June	5,520,000	9,338,000	14,848,000
July	4,469,000	7,098,000	11,567,000
August	4,422,000	8,164,000	12,587,000
September ..	5,014,000	9,071,000	14,085,000
October	4,311,000	7,240,000	11,551,000
November ..	4,538,000	8,016,000	12,554,000
December ..	5,318,000	9,998,000	15,316,000
Totals	63,987,000	88,048,000	152,035,000
Per cent of total	42	58	
Prod. 1922..	138,734,502	45,322,747	185,057,249
Per cent of total	75	25	

Mexican oil production reached its peak in 1921, when a total of 193,397,587 bbls. of oil were produced. Production by years since 1912, in barrels, is shown below:

1923 (estimated)	152,035,000
1922	185,057,249
1921	193,397,587
1920	145,508,949
1919	87,072,954
1918	63,828,326
1917	55,292,770
1916	40,545,712
1915	32,910,508
1914	26,235,403
1913	25,696,291
1912	16,558,215

In January, 1923, daily average production of light oil in Mexico was 227,730 bbls., heavy oil 152,600, or a total of 380,330 bbls. a day. By December light oil output had declined to 177,250 bbls. a day, while heavy oil production had increased to 333,250 bbls. a day, making daily average total 510,500 bbls.

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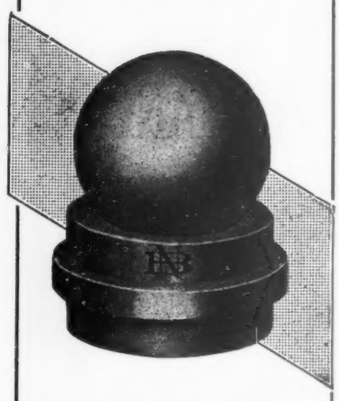

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REFINERY RUNS INCREASE 24,460 BBLS.

(Continued from Page 23)

REFINING OPERATIONS IN OKLAHOMA

Note—Following list covers plants which have been in operation during past year.

Name and location—	Daily Capacity	Runs January 1	Runs December 1
Allied Refining Co., Okmulgee	2,000	1,000	600
Anderson-Prichard Oil Corp., Cyril	1,200	1,000	750
Barnsdall Refining Co., Barnsdall	5,000	3,500	3,500
Bolene Refining Co., Enid	3,600	3,400	3,300
Bristow Gasoline & Supply Co., Bristow	1,000	1,000	800
Cameron Refining Co., Ardmore	4,000	2,750	2,700
Canfield Refining Co., Yale	500	75	125
Champlin Refining Co., Enid	15,000	2,000	2,500
Coleman-Nelson Corp., West Tulsa	2,000	600	600
Constantin Refining Co., West Tulsa	4,500	Shut down	Shut down
Constantin Refining Co., Devol	10,000	Shut down	Shut down
Cosden & Co., West Tulsa	35,000	23,000	21,000
Cushing Refining & Gasoline Co., Cushing	1,500	Shut down	Shut down
Cushing Refining & Gasoline Co. (formerly Modern Refining Co.), Blackwell	1,000	300	250
Daisy Bell Petroleum Co., Wilson	2,000	250	350
Empire Refineries, Inc., Cushing	7,000	3,500	3,200
Empire Refineries, Inc., Okmulgee	2,500	2,500	2,500
Empire Refineries, Inc., Ponca City	5,000	4,000	3,600
Fairmont Refining Co. (Champlin), Fairmont	2,500	Shut down	Shut down
Gilmer Oil Co. (formerly Mid-Continent Refining Co.), Ringling	500	Shut down	200
Glen Braden Refining Co., Perry	1,000	Shut down	Shut down
Globe Oil & Refining Co., Blackwell	5,000	1,200	1,200
Grandfield Oil & Ref. Co., Grandfield	3,000	1,400	Shut down
Hewitt Refining Co., Hewitt	2,000	1,250	1,200
Illinois Oil Co., Cushing	3,000	550	450
Imperial Refining Co., Ardmore	7,000	6,000	6,000
Indiahoma Refining Co., Okmulgee	9,000	Shut down	Shut down
Indian Oil Corp. (Wilcox Oil and Gas Co.)	1,000	650	Shut down
Inland Refining Co., Cushing	3,000	Shut down	Shut down
Johnson Oil Refining Co., Cleveland	3,500	2,800	2,600
Local Refining Co. (formerly Atwood Refining Co.), Oklahoma City	1,000	500	500
Lorraine Refining Co. (formerly Illinois Refining Co.), Bristow	4,000	2,400	2,500
Mariand Refining Co., Ponca City	15,000	7,600	7,000
Maud Oil & Refining Co., Maud	400	Shut down	Shut down
Navajo Refining Co. (Polar), Sapulpa	2,000	750	1,000
Nyanza Refining Co., Wilson	3,500	650	700
Oil State Refining Co., Enid	2,500	550	650
Oil State Refining Co., Allen	600	Shut down	Shut down
Omar Ref. Co. (formerly Garber Ref.), Garber	2,500	1,300	1,200
Oklahoma Prod. & Ref. Corp., Muskogee	2,500	Shut down	Shut down
Pawhuska Refining Co., Pawhuska	1,000	Shut down	Shut down
Pauline Refining Co., Hampton	1,200	450	450
Phillips Co. (Waite), Okmulgee	6,000	4,500	3,500
Peppers Gasoline Co., Covington	1,000	Shut down	350
Pierce Oil Corp., Sand Springs	9,000	4,700	4,750
Producers & Refiners Corp., West Tulsa	7,000	4,500	3,200
Producers & Refiners Corp., Blackwell	3,000	1,000	1,500
Pure Oil Co., Ardmore	7,000	3,000	2,500
Pure Oil Co., Cushing	6,500	5,500	5,500
Rock Island Ref. & Pipe Line Co., Duncan	1,000	1,400	800
Sapulpa Refining Co., Sapulpa	7,000	Shut down	Shut down
Shaffer Oil & Refining Co., Cushing	6,500	5,800	6,000
Southwestern Oil Corp. (operated by Bolene Refining Co.), Enid	1,800	Shut down	Shut down
Sun Oil Co., Yale	4,000	1,000	1,800
Sinclair Refining Co., Cushing	8,000	7,500	4,800
Sinclair Refining Co., Muskogee	1,000	700	700
Sagamore Oil Corp., Grandfield	2,000	1,800	1,700
The Texas Co., West Tulsa	10,000	7,750	7,250
Texas Pacific Coal & Oil Co., Wynnewood	3,000	2,100	2,100
Tidal Refining Co., Drumright	4,500	3,000	1,700
Transcontinental Oil Co., Boynton	3,000	1,100	1,200
Transcontinental Oil Co., Bristow	5,000	3,500	4,000
Tonkawa Petroleum Co., Tonkawa	2,500	Shut down	Shut down
Travis-Center Refining Co. (Western Oil Sales Co.), Beckett	1,500	900	750
Turley Refining Co. (formerly Home Petroleum Co.), Oklahoma City	2,500	150	150
Union Oil & Refining Co., Grandfield	2,000	Shut down	Shut down
Wagoner Refining Co., Wagoner	500	Shut down	Shut down
Yale Oil Corp., Yale	1,500	750	750
*Total	369,000	137,575	126,425

*Includes all plants.

REFINING OPERATIONS IN NORTH TEXAS

Note—Following list covers plants which have been in operation during past year.

Name and location—	Daily Capacity	Runs January 1	Runs December 1
American Oil Corp., Pioneer	2,500	150	300
American Refining Co., Wichita Falls	8,000	4,600	5,200
Boner, H. E., Burkburnett	700	Shut down	Shut down
Bridgeport Refining Co. (formerly Associated P. & R.), Bridgeport	1,000	Shut down	150
Buffalo Refining Co., Sherman	500	150	150
Clayton Oil & Refining Co., Dallas	3,500	3,000	2,000
Crystal Petroleum Co., Burkburnett	1,000	Shut down	Shut down
De Leon Refining Co., De Leon	1,000	350	340
Eastland Pioneer Oil & Refining Co. (formerly Liberty Refining Co.), Cisco	1,000	Shut down	Shut down
Empire Refineries, Inc., Gainesville	6,000	3,500	3,500
Gulf Refining Co., Fort Worth	15,000	4,500	5,000
Home Refining Co., Swastika	1,000	Shut down	100
Humble Oil & Ref. Co., Burkburnett	1,590	900	900
Humble Oil & Ref. Co., Powell	6,500	6,500	Under Const.
Interstate Gasoline Products Co. (formerly New Era Refining Co.), Iowa Park	2,000	Shut down	950
Invincible Oil Corp. (Montrose), Fort Worth	5,000	Shut down	Shut down
Iowa Park Prod. & Ref. Co., Iowa Park	1,500	850	Shut down
Keystone Ranger Ref. Co., Wichita Falls	2,000	Shut down	Shut down
Lone Star Refining Co., Wichita Falls	4,000	Shut down	Shut down
Miller Petroleum Co., Wichita Falls	2,500	1,600	1,900
Magnolia Petroleum Co., Fort Worth	12,000	5,000	4,800
Megargel Refining Co., Mergargel	1,000	600	600
Magnolia Petroleum Co., Corsicana	3,000	2,500	2,750
Mexia Oil & Refining Co., Mexia	600	150	200
Noble Oil & Gas Co., Burkburnett	5,000	2,300	3,000
Oriental Refining Co., Dallas	6,000	2,000	650
Oriental Refining Co. (Trinity), Dallas	3,000	Shut down	Shut down
Orient Petroleum Co., Wichita Falls	2,000	800	600
Panhandle Refining Co., Wichita Falls	4,500	3,000	2,600
The Petroleum Corp. (formerly Beaver-Electra Refining Co.), Electra	2,000	800	1,200
Primrose Refining Co. (formerly Abner Davis), Wichita Falls	1,500	800	500
Ranger Pipe Line & Refining Co. (operated by Hagaman Refining Co.), Tiffin	2,000	400	250
Skelly Oil Co. (form. Nortex Ref.), Burkburnett	2,000	Shut down	Shut down
Star Refining Co., Fort Worth	1,500	400	400
State Refining Co., Dallas	1,000	Shut down	Shut down
Sunshine State Oil & Refining Co., Wichita Falls	2,500	2,000	1,800
Tidal Western Refining Co., Burkburnett	3,000	1,000	1,700
The Texas Co., Dallas	15,000	7,500	7,500
Texhoma Oil & Ref. Co., Wichita Falls	4,500	2,800	3,600
Tiger Refining Co., Breckenridge	1,500	Shut down	100
Transcontinental Oil Co., Fort Worth	5,000	1,200	800
Travis Refining Co., Burkburnett	1,000	400	500
Waggoner Refining Co., Electra	3,400	1,800	2,500
White Eagle Oil & Ref. Co., Fort Worth	5,000	3,100	2,800
*Total	217,350	64,350	61,040

*Includes all plants.

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REFINING OPERATIONS IN KANSAS

Note—Following list covers plants which have been in operation during past year.

Name and location—	Daily Capacity	Runs January 1	Runs December 1
Commonwealth Oil & Refining Co., Moran	1,000	150	150
Derby Oil & Refining Co., Wichita	4,500	1,500	1,500
El Dorado Refining Co., El Dorado	3,500	1,400	2,100
Frontier Refining Co., Hutchinson	2,200	Shut down	Shut down
Grant Oil Co., Augusta	1,000	650	650
Golden Rule Refining Co., Wichita	1,000	750	750
Gordon Ref. Co. (formerly Great Western Oil Co.), Florence	1,000	Shut down	Shut down
Industrial Ref. Co. (formerly St. Louis Oil & Ref. Co.), El Dorado	1,400	750	700
Interstate Refineries, Inc., Centropolis	1,000	Re-run	Re-run
Kanotex Ref. Co., Arkansas City	3,500	3,400	2,600
Kansas Oil Refining Co., Coffeyville	1,500	Shut down	Shut down
Kansas City Ref. Co., Kansas City	5,000	3,750	3,500
Losh Refining Co., Arkansas City	2,000	Shut down	Shut down
Mutual Refining Co., Chanute	1,000	Shut down	Shut down
Moore Refining Co. (Millikin), Arkansas City	6,000	2,100	2,100
Miller Petroleum Co., Humboldt	2,500	1,400	1,400
Mo-Kan Refining Co., Kansas City	1,200	Shut down	Shut down
National Refining Co., Coffeyville	6,000	4,750	4,750
Peerless Oil Refining Co., Chanute	3,500	2,100	2,600
Red Bird Refining Co., Fredonia	800	250	350
Richardson Ref. Co. (Fidelity), El Dorado	2,500	350	350
Rozana Pet. Corp., Arkansas City	10,000	5,000	Under Const.
Sinclair Refining Co., Coffeyville	6,000	5,250	5,250
Sinclair Refining Co., Argentine	7,000	7,100	6,500
Skelly Oil Co. (Midland Ref.), El Dorado	14,000	7,000	7,000
Sterling Oil & Refining Co., Wichita	5,000	Re-run	1,750
Standard Oil Co. of Kansas, Neodesha	12,000	10,000	7,000
Vickers Petroleum Co., Potwin	1,800	1,500	1,300
White Eagle Oil & Ref. Co., Augusta	7,500	6,250	5,000
Wilhoit Refining Co., Joplin, Mo.	1,500	1,400	900
*Total	131,100	66,800	58,250

*Includes all plants.

REFINING OPERATIONS IN ARKANSAS

Note—Following list covers plants which have been in operation during past year.

Name and location—	Daily Capacity	Runs January 1	Runs December 1
Arkansas Oil & Ref. Co., Fort Smith	1,000	Shut down	Shut down
Arkansas Refining Co., Picron	3,000	Shut down	Shut down
Farmers Oil & Ref. Co., Texarkana	750	150	150
Grison Refining Co., El Dorado	750	Shut down	200
Home Refining Co., Hot Springs	500	100	150
Jones & Co., R. C., El Dorado	1,000	Shut down	150
Kettle Creek Ref. Co. (formerly Red River Ref. Co.), Pearson	4,000	3,200	3,200
Lion Oil & Ref. Co., El Dorado	12,000	7,500	6,000
McMillan, Fehlman & Oliver, operating New Ark Refining Co., El Dorado	1,500	Shut down	Shut down
Pine Bluff Refining Co., Pine Bluff	1,000	500	Shut down
Root Refineries, El Dorado	3,000	1,000	2,000
Shippers Pet. Co., El Dorado	700	Shut down	Shut down
Union Pipe Line & Ref. Co., El Dorado	4,000	Shut down	Shut down
Ouachita Valley Ref. Co., El Dorado	1,500	800	750
*Total	37,950	13,250	12,600

*Includes all plants.

REFINING OPERATIONS IN NORTH LOUISIANA

Note—Following list covers plants which have been in operation during past year.

Name and location—	Daily Capacity	Runs January 1	Runs December 1
Caddo Central Oil & Ref. Co., Shreveport	3,500	3,500	3,500
Caddo Central Oil & Ref. Co., Shreveport	7,000	3,500	5,000
Louisiana Oil Ref. Corp., Shreveport	9,000	6,000	4,000
Red River Refining Co., Crichton	1,800	Shut down	Shut down
Shreveport Pro. & Ref. Co., Shreveport	4,500	4,000	4,000
†The Texas Co., Ardis	4,000	4,250	4,000
*Total	48,950	21,250	20,500

†Topping. *Includes all plants.

L. B. JACKSON AGAIN HEADS OIL EXPOSITION

The second annual International Exposition and Congress to be held in Tulsa next fall, was launched Tuesday at the annual meeting of the International Petroleum Exposition, Inc., at which time the executive committee, which will conduct the destinies of the big show was elected. The committee with two exceptions, is made up of the same men who so successfully staged the big exposition last year and is composed of the following men, all of whom are residents of Tulsa: L. B. Jackson, W. A. Vandever, J. M. Hayner, William Holden, James J. McGraw, A. V. Bourque, Alf G. Heggem, T. J. Hartman, James H. Gardner, Frank J. Hinderliter and W. M. Welch. Messrs. Hinderliter and Welch are new members.

The executive committee met on Wednesday and completed the organization by the reelection of L. B. Jackson as president; J. M. Hayner and W. W. Vandever, vice presidents; William Holden secretary and James J. McGraw treasurer.

The committee will meet for the first time to transact general business on Wednesday, January 15, at which time a manager for the exposition will be engaged and the question of the dates on which the big show will be held and the site will be considered.

NEW HEAD OF OIL BUREAU

AUSTIN, Tex., Jan. 9.—The office of chief supervisor of the Oil and Gas Conservation Bureau, State Railroad Commission, was made vacant when Governor Neff appointed R. B. Walthall, for the past nine months the chief supervisor, to membership on the State Board of Control. Former Adjutant General W. D. Cope of Childress, is regarded as a likely selection.

MARLAND CONFERENCE ON SALE REFERENDUM

PONCA CITY, Okla., Jan. 8.—The directors of the Marland Oil Co. of Ponca City will hold a meeting in New York Friday to determine as to further negotiations as to the sale of unissued stocks of the company as reported to J. P. Morgan & Co. Although the directors authorized President E. W. Marland two weeks ago to make such a sale, it develops that it must first receive the approval of the stockholders. Whether or not a referendum will be submitted to the stockholders is to be decided at Friday's meeting.

It is understood here that William G. Lackey, finance director; Walter Miller, Samuel Collins, Charley Brown, Seward Sheldon, George Shallenberger and George Marland left for New York to attend the meeting. All are directors.

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It has a wide circulation going to all the oil fields, refineries, pipe line stations, gasoline plants, supply houses, and business offices. It thoroughly covers the industry.

Mail your advertisement today so that it will appear in next Thursday's issue.

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More Economical than other packings because it lasts longer

"Palmetto" has no equal under high pressure superheated steam and compressed air pressures.

BRAIDED for rods.
TWIST for valves.

Send for free samples to test.

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Sole Manufacturers

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(BLACK DIAMONDS)
FOR DIAMOND CORE DRILLS

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INDUSTRIAL DIAMONDS
— MANUFACTURERS —
DIAMOND POINTED TOOLS FOR ALL MECHANICAL PURPOSES

OUR TESTED CARBON WILL KEEP YOU OUT OF DIFFICULTY

WRITE OR WIRE FOR CATALOGUE AND FULL PARTICULARS

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61 PARK ROW
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Larkin Improved Sand Pump

(PATENTED)

This illustration is the famous Larkin Sand Pump which is found in every oil field throughout the world.

Besides a full line of Drilling and Fishing Tools and Packers of all kinds and sizes, we manufacture the LARKIN Patent Never Slip Pipe Grip, which does away with the old-fashioned way of putting in casing with rope and tongs, and is less expensive, more durable and more easily handled.

LARKIN & CO.

Butler, Pa., U. S. A.

More Power—Less Vibration

Instant Service

Insist on Lightning Pumping Powers
They Are Correct in Design

Jacks, Stuffing Boxes, Casing Heads and Safety Casing Head Tops

HUSKY ENOUGH TO DO THE JOB RIGHT

The reliable eccentric motion does away with jerky lines. Built in 3 sizes.

No. 1—6 to 8 H. P. engine, weight 3,200 Lb.
No. 2—12 H. P. engine, weight 4,600 Lb.
No. 4—Belt drive, weight 6,500 Lb.

Turntable gear is easily removable and having a broad face, coarse teeth and large diameter will stand up to the heaviest loads.

SHACKLE LINES SET LOW TO THE GROUND (13 IN.) ELIMINATE EXCESSIVE STRAIN. QUICKLY INSTALLED.

Oil Field Supply Dept.

KANSAS CITY HAY PRESS COMPANY

Kansas City, Mo.

COMMITTEE PROBE OF TEAPOT LEASE CLOSED

(Continued from Page 20)

freight bills and account books that at no period of these events could it have been covered up, and in fact it was all done in exactly the way a dishonest person would not have done it. It was all so well known that Secretary Fall's neighbors about the Three Rivers Ranch knew of the gift of the horse and the general knowledge of the facts caused some of these neighbors to be brought to Washington to tell about it.

Secretary Fall's statement of his private transactions accounted for his purchases and borrowings of money and showed how he happened to have in his possession large sums in cash that set Three Rivers aflame with gossip until conclusions of guilty conduct permeated the entire vicinity of that cattle country.

Fall's Finances

The fact that Mr. Fall borrowed on his personal note $100.000 from Edward B. McLean, owner of the Washington Post, was the one monied transaction that seemed to excite the suspicion of Senator Walsh. While this was called an unsecured loan, it was in the nature of a demand note, with privilege on the part of Mr. McLean of taking over at cost the Harris Ranch, for which the money was to be used by Mr. Fall, at any time within three years or in the alternative it was provided that if Mr. McLean so desired he could go into partnership with Mr. Fall in this ranch enterprise.

In other words, it was a very well secured loan by which the owner of the Washington Post had three years in which to decide what he would do about the acquisition of a ranch which he had long thought of and at the same time he might call the loan if he needed the money. Most borrowers would have considered such terms quite hard. But apparently Senator Walsh suspected that this loan really came from Mr. Sinclair or one of the oil companies. Mr. McLean explained that he had never met either Sinclair or Doheny, nor was he the holder of stock or interested in any of their companies or subsidiaries.

Stock Manipulation

Getting still further from the Teapot Dome contract, Senator Walsh spent days in delving into the handling of the stock in the companies through which Mr. Sinclair operated to obtain money to finance the Teapot Dome contract. Tedious explanations have been given, both in the form of records read into the proceedings and in the form of testimony to lay before Congress how stock pools in Wall Street operate which had no more relation to the Teapot Dome than they had to every stock manipulation that is a daily occurrence in New York.

The essential showing in this respect was that a pool had been formed to put the stock of the Mammoth Oil Co. on the markets, so worked that the pool would maintain a stable price for the stock should the public dump their holdings on the market to take advantage of the first rise in market value. As reports of drilling in the dome were disappointing, the stock had hard sledding and became a drug on the market. Then, in order to avoid criticism and annoyance, Mr. Sinclair ordered his broker to buy back all Mammoth Oil stock that was floating about, indeed, all that had been sold to the public. That was done and it is no secret that Mr. Sinclair lost by the transaction to such an extent that a man of limited means might have worried over it. Harry Payne Whitney came into this deal in Mammoth stock and today remains a direct holder of 155,000 shares of Mammoth stock with holdings of 23,000 other shares of that stock in the pool that Mr. Sinclair formed and then retired from active operations.

Can Be Reopened

There is nothing to prevent Senator Walsh from reopening this investigation if he should run across any information that excites his suspicion, but he has indicated that he is through, so that the next scene on this stage of Senatorial play will be the report of the Committee on Public Lands before which the investigation took place, Senator Lenroot of Wisconsin, having succeeded Senator Smoot of Utah, as chairman since the hearing opened. The report of the committee can do nothing less than place a very fair interpretation upon all circumstances relating to the leasing of the Teapot Dome. The feature of the report, however, will be the views of the minority, the Democratic members, with the possible addition of Senator Norris, insurgent Republican, who may take a verbal shot at some feature of the proceeding. I will give the Senate and the country at large the benefit of their criticism of Secretary Fall. Later, doubtless, the Democratic clubs of the Northwest will be supplied with copies of Senator Walsh's denunciation of the Fall-Sinclair contract and again the oil industry, as far as it relates to the Teapot Dome, will be kicked about for the amusement of the public.

Osage Oil Lessees Defer Action on Sale Postponement

The Osage Oil and Gas Lessees Association held its annual meeting in Tulsa on Tuesday, January 8, and elected the following officers for the coming year: President, Frank M. Breene; vice president, Burdette Blue; secretary, H. H. Smith; treasurer, Wallace C. Franklin, and the following executive committee:

Frank Phillips, Phillips Petroleum Co.; Frank M. Breene, Winona Oil Co.; Burdette Blue, Indian Territory Illuminating Oil Co.; Burt H. Collins, Echo Oil Co.; Charles Owen, Owen Osage Oil Co.; James B. Diggs, Gypsy Oil Co.; R. I. MacArthur, Barnsdall Oil Co.; H. H. Straight, Empire Gas & Fuel Co.; W. C. Franklin, Tidal Oil Co.; E. W. Marland, Marland Co.; R. A. Griffith, Sinclair Oil & Gas Co.; William N. Davis, Foster & Davis; Carl K. Dresser, Dresser Oil Co.; Charles B. Peters, Middle States Oil Corp.; J. B. Steele, Kewanee Oil & Gas Co.; J. H. Gardner, Gardner Petroleum Co.; W. G. Skelly, Skelly Oil Co.; R. O. Sharp, Oklahoma Natural Gas Co.; J. C. Denton, Cosden & Co.; J. H. Hill, The Texas Co.; F. B. Long, Sand Springs Home; Fred Cook, Prairie Oil & Gas Co.; James A. Veasey, Carter Oil Co.

The president was authorized to appoint a committee of five to inquire into the feasibility of a joint investigation by the association and the United States Bureau of Mines on the question of fuel oil burners and means of stimulating the market for fuel oil and increasing the field of fuel oil burning.

The association decided to defer action on the Snyder and Spencer bills recently introduced in Congress, which provides that the Secretary of the Interior may postpone sales on Indian oil and gas leases for two years whenever in his discretion the state of the oil industry warrants such action. The Interior Department favors the passage of this measure but the Osage Indian council is against it, and because of this division the association decided not to take any stand for the present.

The secretary was authorized to seek the introduction in the present special session of the Oklahoma State legislature of a resolution asking for a refund of the advalorem tax paid in the last four months of the fiscal year ending June 30, 1921, during which time there was an overlapping of the advalorem and the gross production taxes.

COMPANY NAME CHANGED

OKLAHOMA CITY, Okla., Jan. 7.—At a recent meeting of stockholders of the B. P. L. Oil Co. of Oklahoma City the name of the concern was changed to the Pane Brothers Petroleum Co. Martin E. Payne of South Bend, Ind., was elected president, Harry L. Pane of Van Buren, Ark., vice president, and Charles W. Pane of South Bend secretary. The company operates principally in Crawford County, Ark., and has leases and other oil properties in Oklahoma and other States.

Julian's Struggle With Commission Holding Interest

LOS ANGELES, Calif., Jan. 5.—One of the most interesting developments of the week was the open break between C. C. Julian, who holds the controlling interest in the Julian Petroleum Corp., and E. M. Daugherty, California State Corporation Commissioner. Mr. Julian, who, during the past year and a half successfully promoted several syndicates at Santa Fe Springs, organized the Julian Petroleum Corp. six months ago and incorporated under the laws of Delaware with a capitalization of $10,000,000. All of Julian's issues, together with the present Julian Petroleum Corp., were financed to a great extent through newspaper advertising. The refusal during the past week or so of Los Angeles newspapers to carry any more of his advertisements, after doing so for over a year and a half, was a big surprise to the general public and to his stockholders in particular, who followed his advertisements in order to keep posted on the progress being made by the corporation.

The fight being waged between Julian and the corporation commissioner has become very bitter because of the asserted persecution by the corporation department. Julian has had a rather sensational career, rising during the past two years from driller to president of a large corporation. The company was originally incorporated for $10,000,000, and if the statements of Julian are correct he applied to the corporation commissioner for a permit to sell the full amount of stock. After some little delay he was permitted to sell $5,000,000 worth of stock with the assurance that a permit would be issued to sell the remaining $5,000,000 worth of stock after the first block had been disposed of.

Julian claims that of the first $5,000,000 worth of stock sold the corporation commissioner required him to impound in escrow every dollar so raised to be released only upon the order of the corporation department. The first $5,000,000 worth of stock was fully subscribed, it is reported, in 56 days, but Julian claims that the corporation commissioner has continually refused to release these funds on application. Only about $2,500,000 has been released to date. The second complaint Julian cites against the corporation department is the refusal of the corporation commissioner to recognize the maximum 20 per cent selling commission allowed by the State of California. It is claimed that the corporation commissioner has released only $118,000 to date to cover all commissions, attorneys' fees, advertising and general expenses incident to the organization of the company. The third complaint cited by Julian is the action of the corporation commissioner in refusing to release the company's present bank deposits totaling $2,000,000 in cash.

The tying up of this fund places the Julian Petroleum Corp. in a very serious position and has resulted in the laying off of several hundred employes and bringing the expansion program of the company practically to a standstill. The Julian Petroleum Corp. recently entered the open market to purchase crude and has been buying about 5,000 barrels a day, most of which must be paid for every two weeks. The company, with no available funds, is thus placed in a very embarrassing position.

Several weeks ago, when the corporation commissioner refused to issue a permit for the sale of additional stock, Julian crossed the line into Nevada and had issued to himself a block of stock, which was later sold in the State of California as his personal property. This resulted in his arrest and the cancellation of his broker's license, but the charge of violating the Corporate Securities Act was dismissed on December 14 by the presiding justice. Just preceding this action, Julian, while prohibited from issuing stock, borrowed from his stockholders on his personal notes some $2,000,000, which was to be exchanged at a later date for stock in the Julian Petroleum Corp.

Upon the refusal of local newspapers to carry further advertisements of the Julian Petroleum Corp., Julian published several thousand copies of a two-sheet pamphlet called "The Truth." It was distributed gratis and secured a comparatively wide circulation in the vicinity of Los Angeles. The pamphlet contains a full statement of the operations of the Julian Petroleum Corp. and states that the State Corporation Commissioner, by his persecution, forced the removal of the company's office from Los Angeles to Wilmington, Del.

Julian, to use his own words, is fighting with his back to the wall and has offered to place several representatives of the State Corporation Commission on his board of directors to be present at all meetings.

Russians Opposing Baku Concession to Sinclair Companies

NEW YORK, Jan. 7.—Officials of the Sinclair Consolidated Oil Corp. declined to discuss the report from Moscow that opposition had developed among the Council of Commissars to the granting of a large oil exploration lease in the Baku district of Russia to the Sinclair interests. This report was the first definite news that the Sinclair interests were negotiating for such a concession. These interests already hold a lease on oil fields in northern Sakhalin, ratified by the Soviet Government last year, and because of estimates of recoverable oil in that area and the fact that Sakhalin is so located as virtually to dominate the oil markets of the Far East this concession is considered one of the most important held by Sinclair.

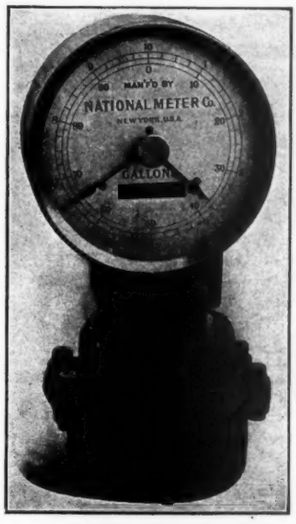
The Sinclair company made no mention of its Sakhalin negotiations until it was virtually forced to admit them because of an announcement by the Russians that a concession had been granted. The same reticence was observed by the company in connection with its Angola concession in Portuguese West Africa, which was obtained in 1921. Recently it was announced that the Sinclair company had been successful in its negotiations for four of the five northern provinces of Persia, it remaining only for the Persian Parliament to ratify the award.

The news that Sinclair is after a concession in the Province of Baku aroused much interest in oil trade circles, inasmuch as Soviet Russia is reported to be keenly desirous of a foreign loan and that she is willing to concede this territory to Sinclair or "mixed company interests" if by so doing a loan would be facilitated. The loan feature of the Sinclair oil concessions is not new, since it is known that the award to Sinclair by the Persian Government carried a provision that these interests would act as sponsor for a loan of $10,000,000 to Persia. Just what sum the award of the Baku concession may involve could not be ascertained here.

Officers of the International Barnsdall Corp., which operates concessions in Baku and Grozny, said they knew nothing about the Sinclair negotiations, but that they had heard rumors of negotiations.

A dispatch from Moscow reports that A. Rykov, acting chairman of the Council of Commissars, said the opposition disapproved of the Government's decision to grant an oil concession to the Sinclair interests on a mixed company basis and on the condition of granting Russia a big loan. The opposition is dissatisfied with the concession, approving the loan only. M. Rykov added:

"I would myself prefer such organization of Europe as would do away with concessions and loans, but as this at the present time is unattainable and we are even unable to obtain an ordinary loan, we are compelled to agree to the oil concession in Baku and Grozny, which gives us great advantages. I am convinced that the Central Committee of the party will approve our decision in this question."



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Every measuring operation can be handled successfully by the EMPIRE oil meter. It is closely accurate, it **holds** its accuracy, and is easy to run and to keep in order.

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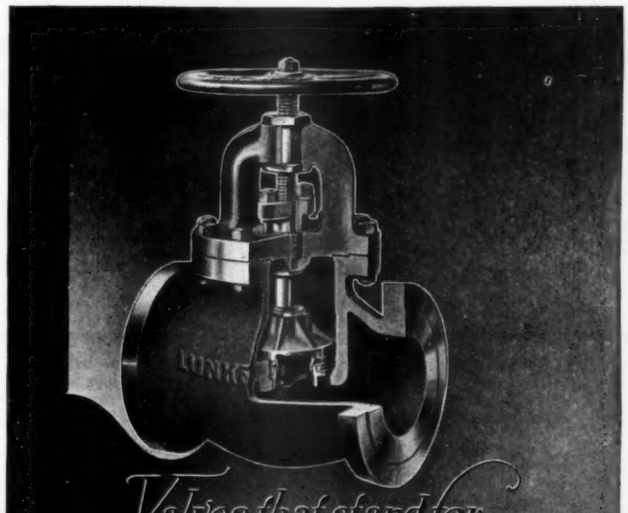

Valves that stand for service and satisfaction

Angle Globe, for low or high pressures or temperatures, of Bronze, Iron Body Bronze Mounted, Semi-Steel Mounted, or of All Iron for handling fluids which attack bronze alloys, a design particularly adapted for this purpose can be found in the comprehensive line of LUNKENHEIMER GLOBE AND ANGLE VALVES.

The completeness of the line makes possible standardizing on Lunkenheimer Valves with that resultant prolonged satisfactory service and economy of maintenance provided only by the Lunkenheimer method of manufacture.

For complete information write for a copy of Catalog 58.

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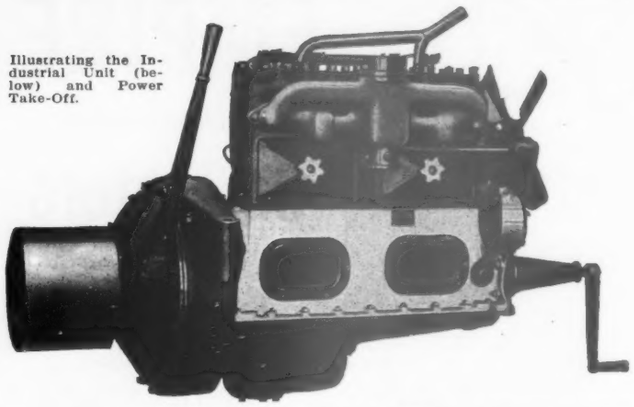
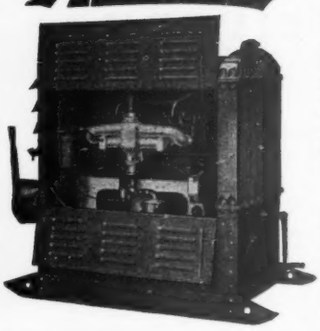


Illustrating the Industrial Unit (below) and Power Take-Off.

Waukesha
TRADE MARK



Pumps and drilling machinery, operated by the Waukesha Industrial Unit, continuously deliver their full capacity. Waukesha, built for work, enables you to maintain this new efficiency and at a consistently low operating cost.

Its power is capable and dependable at all times—under ordinary conditions, in emergencies. Its long-period, economical performance is assured by a manufacturing skill, seasoned through long years' experience building America's finest "heavy duty" motors. Equipped with Ricardo Cylinder Head.

Write today for complete details.

THE WAUKESHA MOTOR COMPANY
Waukesha, Wisconsin
The World's Famous Builders of Bus, Truck, Tractor and Industrial Motors Exclusively
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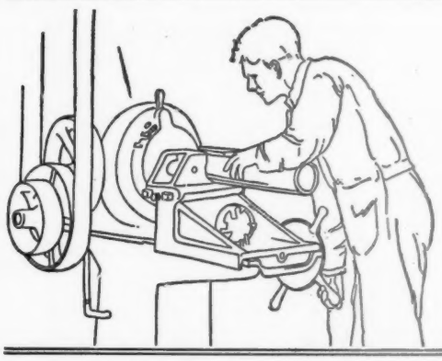

Handling All Pipe Requirements on One Machine Saves Much Valuable Time and Effort

You can cut off and thread pipe, nipples and bolts—both straight and bent—either under or over size—and in long or short lengths—on an Oster Pipe Machine without complicated changes or adjustments.

Ample chip space and clearance permit smooth cutting of leak-proof threads at a speed that pays a profit. In spare time an Oster can also turn scrap pipe into nipples and additional money for you.

Quick releasing die head, open type vise, geared flood-system oil pump and automatic die release and cutoff are some of the reasons for the remarkable popularity of Oster machines. Another is their low operating and upkeep cost.

Write for **"Pipe Threading Profits,"** made up from testimony furnished by Oster owners, which describes many cases of pipe-threading economy.

THE
OSTER
MANUFACTURING CO.
2089 East 61st Place, Cleveland, Ohio

REGULATIONS FOR OIL BURNING HEATERS

(Continued from Page 23)

grees Baume, for installation in hot water heaters, steam boilers, and hot air furnaces.

Combustion "Type C." Combustion Co., Chicago, Ill. Oil burner designed to burn distillate of 24-36 degrees Baume, for installation in various types of hot water heaters, steam boilers and hot air furnaces.

Oil-O-Matic "Types D, E, and F." The C. U. Williams & Son Co., Bloomington, Ill. Oil burner designed to burn kerosene or distillate of 30 32 degrees Baume, for installation in hot water heaters, steam boilers and hot air furnaces.

Quinn. Quinn Oil Burner Corp., Port Richmond, Staten Island, N. Y. Manually controlled oil vapor burner designed to burn kerosene or distillate of 36-40 degrees Baume for installation in hot water and steam boilers and hot air furnaces.

Skinner "Type A." Skinner Engine Co., Erie, Pa. Oil burner designed to burn kerosene or distillate of 35-40 degrees Baume, for installation in hot water heaters, steam boilers, and hot air furnaces.

Type 22. S. T. Johnson Co., San Francisco, Cal. Manually operated oil burner, pump feed type, without automatic means for closing oil supply to the burner in event the flame is extinguished. Designed to burn fuel oil of 24-36 degrees Baume, and suitable for installation in hot water boiler, steam boiler, and hot air furnaces. Standard—for use where a competent attendant is constantly on the premises and when fuel storage conforms to local requirements and installation is made in accordance with requirements of inspection departments having jurisdiction.

Use Higher Grade Fuel

From the foregoing paragraph it is easily seen that most of the accepted burners utilize the higher grades of fuel. Burner men are alive to this drawback. as was brought out during the meeting of the American Petroleum Institute in St. Louis, and it is more than possible that within another year an equal number of burners may pass the examinations by Underwriters' Laboratories and be marketed under specifications that they will use oil of 24-30 degrees Baume, rather than fuel of 36-40 degrees Baume.

Many good oil burners are not yet listed by Underwriters' Laboratories. Many have been examined and rejected. Many more are being improved so that they may win the coveted recognition, but many manufacturers have failed to avail themselves of the advice and counsel of this safety organization. This is something that burner men cannot well neglect, oil men are quick to declare. One of the hazards of the burner business is the spectre of regulation, involving city, State and national statutes.

In view of the necessities for standardization along the line of burner construction and installation the National Board of Fire Underwriters has published the regulations of that body for the construction and installation of oil burning equipments and for the storage and use of oil fuels used in connection therewith as recommended by the National Fire Protection Association. The regulations are published in two parts. The first part concerns installations where a competent attendant is constantly on the premises, making them mostly the larger industrial burners of lower grade fuel. The second part takes up the regulations for the construction and use of oil burning equipments for domestic use.

The preface to this section contains the following: "It is recognized that the safest and therefore most desirable type of oil burning system for domestic use is that employing a pump to deliver the oil to the burner, and having all piping and the tops of all tanks located below the level of the burner base.

"Systems employing gravity or pressure feed to the burner introduce a great hazard and should not be permitted unless installed in full compliance with the following regulations."

A summarization of the regulations is given as follows: Oil used for fuel under these rules shall be a topped or distilled oil having a flash point of not less than 100 degrees Fahrenheit closed cup. An oil burning system shall consist of all equipment connected to the burner and located within the building, including auxiliary supply tank and provisions for filling same, piping, burner and all accessories. Only systems approved by the inspection department having jurisdiction shall be used. Where these systems are used, their hazards shall be recognized and certain rules and precautions rigidly observed.

Storage tanks preferably shall be located outside underground. When located inside of a building and above the ground, the aggregate capacity of such storage tanks shall not exceed 275 gallons.

Inside storage and auxiliary supply tanks of more than 10 gallons capacity shall be constructed of galvanized steel, basic open hearth steel, or wrought iron of not less than No. 16 U. S. gauge. Auxiliary supply tanks of 10 gallons or less capacity may be constructed of brass, copper or riveted plate of not less than No. 18 U. S. gauge. Joints shall be made as specified for outside underground tanks.

Auxiliary supply tanks may be of the gravity or pressure type if suitable automatic safeguards to prevent abnormal discharge of oil at the burner are provided. No such tank shall have a capacity sufficient for more than one day's supply and in no case shall exceed 60 gallons.

If located within a building, gravity tank shall not be within 5 feet, or pressure tank within 10 feet, measured horizontally from any fire or flame. Gravity or pressure tank shall be substantially and rigidly installed on incombustible supports in such a manner as to insure protection against mechanical injury.

Tanks for systems under pressure shall be designed for six times the maximum working pressure and be tested and proven tight at twice the maximum working pressure; maximum working pressure shall not exceed 50 pounds. Tanks shall be provided with a reliable pressure gauge and automatic relief valve piped to discharge outside of the building. Gauging devices or test wells, the breakage of which would permit the escape of oil or vapor within the building, shall be prohibited.

Auxiliary Tanks

Auxiliary tanks shall be filled by pumping from storage tank or by gravity, or by pressure tank contains entire storage. fill pipe shall extend to and terminate outside the building, and in such case tank shall be so installed that in case of overflow, oil will not enter building. Tank shall be provided with an overflow connection drainage to storage tank. Overflow pipe shall be not less than one size larger than supply pipe from pump. The overflow pipe or gravity tank shall not be provided with valves or other obstruction; but overflow pipe of pressure tank and oil supply pipe shall be provided with inter-connected valves, so designed that the opening or closing of overflow pipe shall result similarly in oil supply pipe.

Oil pump use in filling auxiliary tank from the main storage tank shall be of approved type, secure against leaks, with check valves located as close to pump as convenient. Pumps shall be rigidly fastened in place.

Standard, full weight, wrought iron, steel or brass pipe with substantial fittings shall be used and shall be carefully protected against mechanical injury in a manner satisfactory to the inspection department having jurisdiction. In all piping systems proper allowance shall be made for expansion and contraction, jarring and vibration. All joints shall be made with litharge.

All piping shall be separated from electric wires not enclosed in approved conduit, raceways and armored cable, by some continuous and firmly fixed noncombustible conductor creating a permanent separation as provided in the National Electrical Code. The use of tubing of any kind is prohibited. Supply pipe shall be not less than one-fourth inch in diameter.

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The Tools For Hard Work

TRIMO users buy for long service. Long wear is built into TRIMO tools. Best possible design, embodying every operating convenience and feature of economy.

The Pipe Cutter

has a drop-forged steel frame, with forged steel cutting wheels. Fully guaranteed by the makers against poor materials or workmanship. All parts easily replaced. Three sizes, No. 1 cuts pipe ⅛" to 1¼"; No. 2, ⅛" to 2"; No. 3, 1" to 3".

Other Tools Having the

Quality TRIMO Mark

ARE THE

Pipe Wrench—Monkey Wrench
Chain Pipe Wrench

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TRIMONT Manufacturing Co.
Roxbury (Boston), Mass.

ticular emphasis is placed upon proper installation of piping with reference to joints, etc.

Readily accessible valves shall be provided near each burner and also close to the auxiliary tank in the pipe line to burners. Control valves shall be of approved type provided with stuffing box of liberal size, containing a removable cupped gland designed to compress the packing against the valve stem and arranged so as to facilitate removal. Valve shall be designed to close against the supply, and to prevent withdrawal of stem by continued operation of the handwheel. The use of packing affected by the oil or heat is prohibited.

The size of the orifice through which the oil is supplied to the burner shall be limited to furnish the only sufficient oil for maximum burning conditions when the controlling valves are wide open. Valves shall be arranged so as not to enlarge the orifice.

Burners containing chambers which allow the dangerous accumulation of gases, or oil conveying pipes or parts subject to intense heat or stoppage due to carbonization are prohibited. Burners shall be so designed as to permit of ready cleaning and not allow the leakage of oil.

Automatic systems shall be so designed that the flame cannot be extinguished by operation of the automatic control valve or a gas pilot light shall be provided in the combustion chamber.

Regulations concerning the installation of oil burners in furnaces and heaters are rigid and involve such matters as removing the ash door, removal of dampers in chimneys, and other factors which would prohibit adeuqate venting. No combustible material shall be stored within 10 feet of the furnace door.

Regulations also provide for the protection of woodwork near the burner and state further that near the furnace, and so located as to be convenient for use in emergency, there shall be provided a hand extinguisher of approved type suitable for use on oil fires. It is also required that a card giving complete instructions in regard to the care and operation of the system shall be permanently posted near the apparatus, under glass and framed.

Oil burning equipment shall be installed only by properly qualified mechanics experienced in this kind of work. It is recommended in the bulletin issued by the National Board of Fire Underwriters that systems be installed by the manufacturer.

A resume of the points covered in the above summarization shows that the regulations of the national body contain only the provisions which manufacturers and users should be glad to observe, for their benefit and safety. The regulations are not unnecessary or dictatorial and should be easy to meet by those who have the interests of the burner business at heart.

Also, the regulations, if properly observed, should give the user all the protection necessary. They are complete and cover every hazardous detail. Much, however, is left to the inspection departments having jurisdiction. Considerable as well depends on the skill of the workmen making the installation.

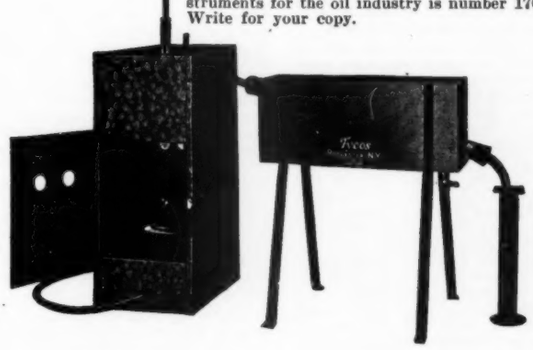
For a start in the right direction, however, the oil burner makers have done well to observe the regulations for domestic heaters. New developments will bring new situations and new solutions, but oil men feel that a safe and sane, as well as certain outlet for fuel oil is being assured them as an additional market for their products.

COL. STEWART SEES PRESIDENT

WASHINGTON, D. C., Jan. 4.—President Coolidge called R. W. Stewart, chairman of the board of directors of the Standard Oil Co. of Indiana, into conference at the White House today over business and political conditions in the Central States. Mr. Stewart would not discuss his conference with Mr. Coolidge, but he strongly endorsed the president's message to Congress, with special reference to the Mellon tax proposal.

Indicating **Tycos** Temperature Instruments Controlling Recording

Initial and End Points



It will take you just 30 to 40 minutes to test for initial and end points. Use *Tycos* Distillation apparatus. Every gasoline purchaser needs one to check on gasoline. A few tests and this apparatus will pay for itself. Equipped with electric or gas attachments. Complete catalog of *Tycos* Temperature Instruments for the oil industry is number 1700. Write for your copy.

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READING CAST STEEL GATE VALVES

Reading Cast Steel Gate Valves are built for high temperature work, particularly. The flexible construction and suspension of the disc and the method of setting in and backing up the seat ring provide for keeping the valve tight when expansion begins.

The steeel you are familiar with in Reading Fittings.

READING STEEL CASTING CO., Inc.
Reading Valve and Fittings Division
General Sales Office: Bridgeport, Conn.

Stocked by: Norvell-Wilder Hardware Company, Beaumont, Houston, Mildred and Shreveport
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25 CENTS per line first insertion; 15c per line each additional insertion. Cash in advance.

CLASSIFIED WANTS

COPY must be in our office Friday prior to date of issue. Average 6 words to the line. Cash in advance

LEASES—PRODUCTION

FOR SALE—At bargain prices. oil and gas leases, production and royalties in the Kentucky shallow fields. For full particulars and maps, address W. P. Harley, Bowling Green, Ky.

TEXAS OIL LEASES 10c an acre up to $10 an acre. Will sell tracts of 10 acres or more. Have 30,000 acres to choose from. All new five-year leases. Get full particulars. Gulf Realty Co., 1093 Bedell Bldg., San Antonio, Tex.

I HAVE wildcat acreage for sale in vicinity of well located by the same geologist who discovered the Sayre oil field and recommended by him to be as safe an investment as the Sayre Field. I can sell for $2 per acre and up. Dr. W. R. German, Canadian, Tex.

10c AN ACRE and up for leases in Guadalupe, Blanco, Medina, Zapata and many other counties. Will sell 10 acres or more. All new five year leases. Get particulars. Gulf Realty Co., 1014 Bedell Bldg., San Antonio, Tex.

FOR SALE — 300-acre farm, all in cultivation, adjoining Checotah, Okla., on main line Missouri-Kansas-Texas Railway and Jefferson Highway; large house, barn, city water, light and gas; no better location in Oklahoma for grain, fruit, dairy and stock farm. If interested, write the owner for price and terms. A. G. Harmon, 506-7 Exchange National Bank Bldg., Muskogee, Okla.

FOR SALE—Leases or production in shallow field, wells from 700 feet to 950 feet deep. Will sell acreage or production cheap. Owner, P. O. Box No. 385, Logan, Ohio.

ATTENTION, Oil Man or Investor: 45-section improved ranch in central Gray County, Texas, in line with present oil development, $10 per acre in fee; unusually good terms. Other choice Panhandle propositions and leases on demand. Address G. C. Davis, Amarillo, Tex.

WEWOKA leases and royalties; drilling proposition. Only first-class stuff offered; guarantee delivery. E. E. Tomlinson, Box 363, Wewoka, Okla.

POTTAWATOMIE COUNTY leases and royalties. B. H. Rowlett, Tecumseh, Okla.

PRODUCERS, Refiners and others interested can secure protection acreage on one of the best anticlines in Montana. Recommended by U. S. G. S. and leading private geologists. Test well now drilling. Walter F. Brittan, Poplar, Mont.

RANCH—Greenwood County, Kansas; choice 2,000-acre pasture land in oil belt will be sold at agricultural value. Fine opportunity to make safe investment that may yield fortune later. J. E. Leader, Madison, Kans.

FOR SALE—Gas and oil property; 1,500 acres well blocked; gas well supply. A good market and good price. Large gas territory. Oil well on pipe line. Shallow, inside locations to drill. E. O. Mullin, 416 Robinson Bldg., Tulsa, Okla.

I HAVE 320 acres in Anderson County, Kansas, within three-fourths mile of production, will sell three eighties for $10 per acre and will drill a well 1,000 feet within 600 feet of all three eighties. Address J. V. Schafges, Box 107, Colony, Kans.

IF YOU have leases in shallow production and need capital, address 20 Lindero Avenue, Long Beach, Calif.

FOR SALE—20-acre 1-64 royalty, Bradley County, Arkansas. Well located and very cheap. Will take $1 per acre for quick sale. Camden Investment Co., Camden, Ark.

I AM offering two undivided 5-acre tracts in royalty and east half of the northwest quarter, Section 25-6-6, Seminole County, offset to gas well; if taken soon, at $1,000 each.

Also other lands, leases and royalties for sale in Seminole, Pottawatomie, and Pontotoc Counties, Oklahoma. I. H. Townsend, Kanawa, Okla.

LEASES—PRODUCTION

NOTICE to Cash Buyers—Fine, large farms for sale. Paul D. Hubbard, Olathe, Kans.

FREE LEASES—San Juan Basin, to developers. New Mexico's famous high gravity territory; 160 to 20,000 acres. Edward C. Hall, Sugar Land, Tex.

$12,000 EQUITY, 196 acres 1½ miles Caney, Kans., 100 acres creek bottom alfalfa land; no overflow; balance upland pasture; well improved, 2½ miles to oil. Want cash, income or merchandise. J. H. Miller, Mound Valley, Kans.

WILL TRADE oil leases near drilling well in Childress County, Texas, on structure for similar leases or royalties near other drilling wildcat wells. Our well is fully financed and contracted to reliable people. No rentals till 1926. 300 Alworth Bldg., Duluth, Minn.

SHEFFIELD TERRACE (Marathon Fold) and Balcones Fault leases. We have them for 10c an acre up in tracts of 10 acres or more. All new five-year leases. 30,000 acres to choose from. Get particulars. Gulf Realty Co., 1017 Bedell Bldg., San Antonio, Tex.

ARCHER COUNTY, Texas—Have oil lease in southeast trend of Electra, Kemp, Munger, Allen and the new fields of Archer County. Will sell 40 acres at $7.50 per acre. Lease runs over four years. W. M. Breuer, Box 650, Wichita Falls, Tex.

BEST SEMI-PROVEN oil acreage in Wyoming—on structure—2,560 acres.

Adjoining property north pumping at 500 to 880 feet; flowing well at 1,200 feet, estimated to make 200 to 1,000 bbls. a day when drilled in—44.8 gravity oil, 55 per cent gasoline, 25 per cent kerosene, 15 per cent lub, and 5 per cent fuel and residue. Property under contract for sale to Utah Oil (Standard).

Adjoining property south just contracted to Salt Creek operators for drilling to start in 30 days; expect oil in 60 days. Other wells now drilling and contracted.

Will consider offers for sale of portion of tract, of drilling contract, or will share on first cost basis with parties providing part funds for development. Send dollar for map and reports. R. C. Horn, 410 Scott Bldg., Salt Lake City.

OIL LEASES

We have leases 20 to 50 miles from the new Luling Field in Texas from 10c an acre up to $1 an acre in tracts of 10 acres up to 10,000 acres. We have many other leases along Balcones Fault and Sheffield (Marathon Fold) Terrace. Here are a few of our leases:

Blanco County	10c an acre
Bandera County	30c an acre
Comal County	15c an acre
Hays County	20c an acre
Guadalupe County	$1 an acre
Kerr County	15c an acre
Medina County	40c an acre
Travis County	25c an acre
Zapata County	$1 an acre

We also have leases less than 1 mile from production at higher prices. All these leases are the standard form 88 5-year leases and all were bought direct by us from the land owner, which accounts for the extremely low prices. We have 30,000 acres on hand to take care of your orders. Don't send any money now; get particulars and maps first. No obligation.

GULF REALTY CO.
1022 Bedell Bldg. San Antonio, Tex.

OIL OPERATORS—Montgomery County, Mississippi, world's next big oil field; 3,000 acres leases for well. W. C. Brooks, 282 S. Front St., Memphis, Tenn.

FOR SALE—Bargain improved 5 acres at Butler, Mo.; bluegrass; fine for dairy and poultry business. J. P. Hart, Butler, Bates County, Missouri.

WEWOKA—Oklahoma's newest oil field; have high class or cheap leases and royalties for sale, in Seminole, Pottawatomie and Lincoln Counties. W. R. Turner, 2123 Warren Ave., Chicago, Ill.

LEASES—PRODUCTION

FOR SALE—200-bbl. a day combination oil and gas lease; 300 acres and the wells 1,000 feet deep. Address, Triangle Oil Co., Independence, Kans.

ROYALTY—For sale in 9-9, Hughes County, Oklahoma; offset to drilling well located between two oil wells. Address Box A-21, care The Oil and Gas Journal, Tulsa, Okla.

WANTED—REFINERIES

IN THE MARKET for small refinery. Give full particulars in letter. Address 20 Lindero Avenue, Long Beach, Cal.

REFINERIES FOR SALE

OIL REFINERY for Sale. Address J. I. Jones, Trustee in Bankruptcy, Box 1005, Great Falls, Mont.

FOR SALE—One-half interest in 1,000-bbl. refinery for $15,000; will put $5,000 back into the company for operating money. Will inventory better than $400,000. Address, Triangle Oil Co., Independence, Kans.

FOR SALE—EQUIPMENT

FOR SALE—All sizes used casing and line pipe, A-1 condition. Wire or write for prices. Breckenridge Salvage & Supply Co., Box 1742, Breckenridge, Texas.

FOR SALE—Used casing and line pipe in A-1 condition, all sizes. Write or wire for prices. Cisco Pipe & Supply Co., Cisco, Tex.

FOR SALE — A 28 Star, fully equipped, near Sedan, Kans. Will sell cheap to close a copartnership. W. G. Kountz, Webb City, Mo.

FOR SALE—One No. 26 Star, only drilled one hole, fully equipped. Price $3,500. If interested, write or wire Harry Jorren, Bowling Green, Ky.

MILLER GAS ENGINE—Two-cylinder 85 h. p., practically new. A bargain for a quick sale. Address Jacob Wizenberg, Titusville, Pa.

FOR SALE, CHEAP — Standard rig, complete, Oil Well Supply Co. outfit. Address John Ewen, Alanreed, Tex.

DON'T BUY a light plant until you see Farmelectric, the Ford Parts Plant, and get prices and terms. Chas. S. Brown, state distributor, 21 N. Dewey, Oklahoma City, Okla.

THE WESTERMAN STUFFING Box does not pack with rubber rings and will give long, continuous service without attention. If your supply dealer hasn't them, send your order direct to The Dragon Mfg. Co., Marietta, Ohio.

FOR SALE—23 Star Drilling Machine in good condition and complete set of tools; will sell very reasonable for cash. J. H. Brocksmith, 1856 Menard St., St. Louis, Mo.

LOOK—1-26, 1-25, 1-24 Stars, complete; bargains; one or all. Other business. Box 291, Wagoner, Okla.

FOR SALE—3,000 feet 3-inch 8-lb. National Upset drill pipe; 900 feet 2½-inch, 8-lb. National Upset drill pipe; 65 3-inch W. K. M. tool joints; 35 4-inch tool joints; 14 6-inch tool joints; 1 5⅞-inch Hughes Rock Bit, and other rotary supplies used in making one hole. Priced to sell f. o. b. Bloomington, Texas. For complete list and prices, address, H. W. Dodd, Victoria, Texas, or the Dodd Company, 501 Mayo Bldg., Tulsa, Okla.

FOR SALE—Transcript of testimony in case of Burrus vs. Halliburton, patent suit in United States Court, involving patent for cementing process of oil wells. B. R. Simpson, 515 Patterson Bldg., Oklahoma City, Okla.

FOR SALE—Geological library; U. S. Geologic Survey Annual Reports, Monographs, Professional Papers, Bulletins and Water Supply Papers; about 700 volumes; $350 f.o.b. F. C. Greene, 1434 S. Cincinnati, Tulsa, Okla.

WANTED

WANTED—Offer for 100 shares Model Gasoline Co. Address Box A-41, care The Oil and Gas Journal, Tulsa, Okla.

WANTED

WANTED—Proven acreage in shallow field. Give full particulars and price. Address 20 Lindero Avenue, Long Beach, Cal.

WANTED—Block of acreage on good geology for drilling contract. Quick action. Address Box 957, Kansas City, Mo.

EXPERIENCED oil jobber would like to hear from refiner or someone with capital to join in establishing bulk stations in Iowa. Address P. O. Box 227, Des Moines, Iowa.

GROWING specialty company selling oil field equipment, is desirous of securing a reliable office and sales manager. Small investment required. Write Box A-32, The Oil and Gas Journal, Tulsa, Okla.

WANTED—From owner direct, complete 24 Star rig, casing, etc. Also good driller. A. Schick, Vinland, Kans.

WANTED—Complete string heavy used Standard tools. Must be priced right and in perfect condition. Ouray Drilling Syndicate, 617 Exchange Bldg., Denver, Colo.

WANTED—A good reliable bond house to underwrite a bond issue for an oil and gas company; 150,000 acres of oil and gas leases with $1,000,000 a year income. Address Triangle Oil Co., Independence, Kans.

WANTED—To contract for gasoline rights of dry or casinghead gas to build gasoline plants. Also interested in the purchase of present gasoline plants, preferably in the East. Address Box A-31, care The Oil and Gas Journal, Tulsa, Okla.

WANTED—Direct from owners, producing oil property in Kentucky, to operate on a percentage basis, property the owners are away or unable to give the proper care. Give full particulars first letter. Address Box A-30, care The Oil and Gas Journal, Tulsa, Okla.

CAPITAL ENLISTED

WANTED—An issue of securities to float in the East by reliable concern, on commission. Address Brokers, U. S. Realty Bldg., Suite 512, New York City.

WANTED—Good blocks of acreage in Eastern Texas, southern Arkansas, and Oklahoma for drilling contracts. Submit full details and best proposition in first letter. If not interested, all data will be returned. Box 804, El Dorado, Ark.

BUSINESS OPPORTUNITY

I HAVE some fine duck lakes to lease and a good house to camp in and will keep the decoy ducks. A. T. Lloyd, Route 4, Clinton, Mo.

COMMON LAW COMPANIES—Organize under Declaration of Trust; many advantages; legal everywhere; managed by trustees; limited liability. No State organization fees, reports or franchise tax. Meet or do business anywhere. Better than a corporation or partnership. Booklet free. Modern Organization Co., 304 South Broadway, Los Angeles, Calif.

To circularize the readers of The Oil and Gas Journal, once, it would cost more than $500. For a small sum you can reach these readers and place your proposition before them.

The classified rates are attractive. It costs but 25 cents the line for the first insertion and 15 cents the line for each additional insertion. Six words usually make a line. Cash with the order.

This useful table will help you to figure the cost of Classified Advertising in The Oil and Gas Journal. Keep it for reference:

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COPY must be in our office Friday prior to date of issue. Average 6 words to the line. Cash in advance

BUSINESS OPPORTUNITY

INTERNATIONAL financing; want right now high-grade bond or stock issue. Box 471, Oklahoma City, Okla.

CHARLES T. LUPTON, Consulting Geologist, First National Bank Bldg., Suite 1029-30, Telephone Main 6550, Denver, Colo.

SHAWNEE, OKLA.—A growing city, fast developing as an oil center. For information, write Board of Commerce, Shawnee, Okla.

IF YOU are a working man or woman and want success, write for proof of financial independence. Address Messinger, 1101 Chronicle Bldg., San Francisco, Calif.

CAPITAL SEEKERS—Put your project before 470 Canadian brokers and bank managers; cost trifling, under my plan. Details free. Amster Leonard, First National Bank Bldg., Chicago, Ill.

VENEZUELAN Oil Concessions—Officers of large oil producing company would consider inviting select coterie of experienced oil men of good standing to join in acquiring choice oil holdings and concessions in Venezuela. Post Office Box 957, Kansas City, Mo.

STRONG CORPORATION will open negotiations with view of taking over company whose holdings will stand investigation as to value. Replies will be treated confidential. Address Engineering Department, 633 Fisk Bldg., New York City.

CAPITAL RAISING — Compaigns planned, written, printed — everything complete ready to mail to investors. Twenty years' experience handling investment advertising. Clients all over America. Big, illustrated book, "How to Raise Capital" free if you submit detailed outline of your proposition. Ernest F. Gardner, L-511 Ridge Arcade, Kansas City, Mo.

GEOLOGICAL ENGINEER, 12 years' experience examinations, reports, appraisals, management, oil properties, seeks a new engagement or proposition either with an oil company or with a banking or brokerage house interested in financing or specializing in oil. Principals only. Write Box A-12, The Oil and Gas Journal, Tulsa, Okla.

INVESTMENTS

We have a proposition in real estate that in our opinion will pay 100 per cent. The investment requires $20,000 and would carry with it a position of trust, if satisfactory. The proposition has been approved by the president of one of the leading banks of the city. This statement sounds like a dream, but investigation will make a believer of you. Parrish & Harrell, 18 West Main St., Oklahoma City, Okla.

HELP WANTED

DRAFTSMAN — Experienced in oil field equipment and capable of laying out and detailing tractors and power-transmission machinery. Good opening with live Ohio concern for the right man. State age, experience, salary desired and when available. Address Box A-23, care The Oil and Gas Journal, Tulsa, Okla.

OIL DEALERS AND JOBBERS—Large corporation manufacturing most efficient oil burner on the market desires dealers, distributors, and special agents everywhere. Develop big distillate business in your territory with "Sun" burner. Write today for attractive offer. Dept. 7, Heating Equipment Corp., Lincoln, Nebr.

CORPORATION manufacturing well known make of Water Cooling Tower, desires to make arrangements with engineering representative familiar with oil plants using the cracking process, or casinghead process where water cooling towers are required, to intensively cover the available territory on a salary, or salary and commission basis. Reply giving full details as to qualifications, etc. Box L. C., care The Oil and Gas Journal, 30 Church St., New York City.

POSITION WANTED

REFINERY YIELDS and costs. Experienced man now unattached. Will go anywhere. Address Box A-49, care The Oil and Gas Journal, Tulsa, Okla.

GRADUATE in geology and experienced, wishes position as geologist or instrument man. Address Box A-43, care The Oil and Gas Journal, Tulsa, Okla.

MECHANICAL Engineering Graduate with four years office and field experience in production work wishes position with reliable oil company. Address Post Office Box 243, Topeka, Kans.

The Journal has a wide circulation, going to all the oil fields, refineries, pipe line stations, gasoline plants, supply houses and business offices. It thoroughly covers the industry.

PRACTICAL oil man desires employment who has had success drilling, increasing old production, eliminating water, economy in operating expenses. Reference. Address Box A-11, care The Oil and Gas Journal, Tulsa, Okla.

CARBON BLACK superintendent desires connection with responsible party West. Experienced in construction plants and producing different grades of black. At present in charge of operation East. High-class references. Address Box A-3, care The Oil and Gas Journal, Tulsa, Okla.

THOROUGHLY experienced pipe lineman. Can plan, install and operate any kind of pumping machinery. Will show efficiency and economy. Some experience as superintendent. Employed; desire change; excellent references. Address Box A-40, care The Oil and Gas Journal, Tulsa, Okla.

YOUNG MAN—Graduate petroleum geologist with field experience, wants employment of some kind with a company. Will work anywhere and do work of any kind. Address Box A-42, care The Oil and Gas Journal, Tulsa, Okla.

FIELD MANAGER, who has had several years' experience in charge of production and drilling for large companies in the Mid-Continent and Wyoming fields, is open for a position of responsibility. Am a graduate engineer and possess references of highest character. My experience, which has been very thorough and extensive as an executive and field manager, qualifies me to handle the operations of a private individual or the work of district superintendent. If you are in need of a man who has developed character and initiative, please address Box 803, care The Oil and Gas Journal, Tulsa, Okla.

PIPE LINE superintendent, a man who has had several years' experience on both main lines and gathering systems, would like to connect with company that appreciates ability to handle both the office and field.

Thoroughly understand tank building, construction, operation and maintenance of pump stations and main lines.

Can install over and short system that is leader of such systems.

If you are in need of a good man for a responsible position, would like to exchange references. Am now employed, but will be open for position about first of the year. Address G. 509 W. Hillsboro St., El Dorado, Ark.

FOR SALE—PETS

REGISTERED Bull Pups—Bulldog Park. 501 Rockwood, Dallas, Texas.

AIREDALES—One male, $15; two females, $10; pedigreed; 3111 Wood, Kansas City, Kans.

PATENTS

OPPORTUNITY now open for reliable equipment or tool manufacturer to secure manufacturing and sales rights for most needed invention of oil industry. Tested, approved and thoroughly protected by United States and foreign patents. Royalty basis. Box 316, Wheeling, W. Va.

COMMERCIAL LANGUAGES

LEARN to speak Spanish. A valuable asset to any oil man. Commercial and literary classes, day or evening. Interpreting of Spanish letters a specialty. Messinger School of Spanish, 241 Robinson Bldg., Tulsa, Okla.

LETTERHEADS—PRINTING

OIL FIELD LEGAL BLANKS—Leases, assignments, releases, township plats, gauge books, run tickets, time books, well records, etc. Request on your letterhead gets free catalogue. Olds Press, 215 East Third St., Tulsa, Okla.

OFFICIALS SELECTED BY ARKANSAS GAS CO.

PITTSBURGH, Pa., Jan. 5. — At a meeting of the board of directors of the Arkansas Natural Gas Co. J. R. Munce was elected president, taking the place of J. C. Trees, who retired from the presidency, but remains active in the company as chairman of the board of directors. Mr. Munce has been vice president and general manager of the company, with headquarters at Shreveport, La., but will now make his headquarters at Pittsburgh. He is well known in the southwestern oil and gas fields, being now president of the Louisiana and Arkansas division of the Mid-Continent Oil and Gas Association. He is also vice president of the Reserve Natural Gas Co. of Louisiana. Before joining the Arkansas Natural Gas Co. Mr. Munce was connected with the Crawford interests, being general manager of the United Fuel Gas Co. of West Virginia.

At a meeting of the board of directors of the Arkansas Fuel Co., a subsidiary of the Arkansas Natural Gas Co. three new directors were added to the board: J. R. Munce, of Shreveport, La.; John S. Weller, Pittsburgh, and C. F. Anderson, Dallas, Tex. Mr. Anderson is an experienced oil man in the southwest, where he was formerly connected with the United States Texas Oil Co., which company operated extensively in the Mexia and Corsicana, Tex., fields. He will take charge of the land department for the Arkansas Fuel Oil Co.

Say you saw it in The Oil and Gas Journal.

Urge That Congress Should Vest Title In Indian Occupiers

The committee of One Hundred appointed by the Secretary of the Interior to advise with him concerning the interests of the American Indian, which met in Washington December 12-13, submitted the following opinions and recommendations:

"This committee finds that the Indians, unlike any other citizen or class of citizens, are denied access to the Court of Claims of the United States, except in special instances under special enactments, to have their claims against the United States arising out of violations by administrative officers of the United States of their treaties or agreements reduced to final judgment, and this committee recommends the enactment to suitable legislation that will enable every group or tribe of Indians to obtain through the Court of Claims a judicial and final accounting with their guardian, the United States.

"We recommend that the Secretary of the Interior suspend all departmental proceedings touching the sale or lease of oil, gas, or minerals on or from Executive Order Indian Reservations pending action by the Congress to vest the title of said reservations in the Indian occupying them.

"Because of the importance of the issue for the Pueblo Indians concerned, and because certain test cases are now pending affecting Pueblo land titles, the decisions of which will be material assistance to the framers of legislation, the committee strongly urges the most prompt and vigorous action of the Department of the Interior and the Department of Justice to hasten the rendering of decisions upon these cases in the lower courts and in the courts of final appeal. Where titles to original holdings of the Pueblo Indians are annulled for any reason directly traceable to the negligence of the Government or through the voluntary relinquishment by the Indians with the consent of the Government of lands to which they hold title, we urge on Congress, a matter of simple justice, that the Pueblos should receive adequate compensation. Further, that in the event that it becomes necessary to evict from Pueblo land, settlers who have occupied such lands in good faith through Government failure to act, in such event we urge again as a matter of justice that the United States Government should compensate such settlers."

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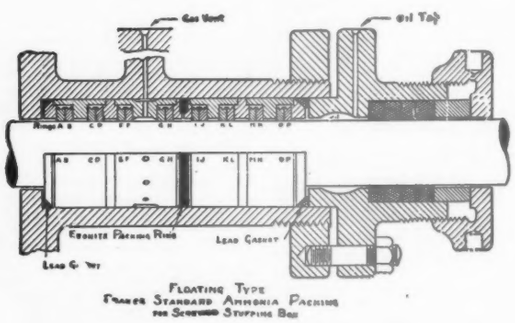

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Branches: Western Supply Co., P. O. Box 1824, Tulsa, Okla.
A. C. Stucky, 222 Warwick Blvd., San Antonio, Texas

Late Fields

OKLAHOMA

The third and last offset to the Prairie Oil & Gas Co.'s well, in the NE cor. SE NW, Section 9-27-5, in the Burbank Field, Kay County, Oklahoma, was brought in by the Phillips Petroleum Co. It was 9 Clubb, SW cor. NW NE, same section, and topped the sand at 2,963 feet. The first flow came at 2,983 feet, and at a total depth of 2,993 feet, the well flowed 427 bbls. natural in the first 12 hours.

The Sinclair Oil & Gas Co. was pulling the big pipe at 2,900 feet in its No. 2, NE cor. SW, Section 9-27-5.

A deep Grady County test was abandoned as a failure when Briscoe & Hall plugged No. 1 Gooch, C NE NE NE, Section 31-5n-4w, at 3,012 feet.

The Atlantic Oil Producing Co. had a 70-bbl. well on the swab in its No. 1 Cobb-Hamilton, C NW SW NW, Section 5-3s-2w, Carter County. Merrick, Kirk and others also had a 100-bbl. producer in broken sand at 2,871-2,953 feet. This well was No. 2 Cobb, C NW NE SW, in the same section. The Schermerhorn Oil Co. brought in No. 4 Palmer, C NW SW SW, Section 32-2s-2w, for 200 bbls. from three sands at 2,810-31, 2,837-42 and 2,868-78 feet. The Healdton Oil & Gas Co.'s No. 3 Burrows, C SW NE NE, Section 31-2s-2w, was good for 100 bbls. on the pump from sand at 2,476-2,500 feet.

Three wells in the Wewoka Pool in Seminole County reached productive sands late Tuesday. All three belong to the Dixie Oil Co., No. 1 Foster, SW cor. Section 28-8-8, making 218 bbls. in 9 hours from sand at 3,129-41 feet; No. 1 Walker, SE cor. NE NW, Section 32-8-8, was good for 47 bbls. in 12 hours from sand at 3,132-42 feet; and No. 1 Long, NE cor. SE NW SW, Section 33-8-8 was swabbing with 2,000 feet of oil in the hole from sand at 3,005-15 feet.

The Dixie Oil Co.'s No. 1 Roxana, NE cor. SE SW SE, Section 25-8-7, topped a gas sand at 2,694 feet, where the flow was estimated at 6,000,000 to 8,000,000 feet, and was still drilling in sand at 2,700 feet.

Floyd Howarth's No. 1 Fields, SE cor. SW NW, Section 1-11-8, Okfuskee County, found the sand at 3,328-36 feet, swabbed 85 bbls. during the last 24 hours.

Two failures were recorded northwest of Duncan in Stephens County. The Roxana Petroleum Corp. abandoned its No. 3 Cook, NE cor. SW, Section 30-1n-8w, at 2,340 feet, and the C. & O. Oil Co.'s No. 6 Ridge, SE cor. NW NW, same section, was dry at 2,035 feet.

In the Graham district of Carter County, the Magnolia Petroleum Co.'s No. 2 Lahman, SE cor. Section 23-2s-3w, was good for 450 bbls. from sand at 2,232-73 feet. The Twin State Oil Co.'s No. 2 Jefferson, CEL NE SE NW, Section 25-2s-3w, was swabbing 40 bbls. from sand at 2,190-96 feet. The Southwestern Petroleum Co.'s No. 5 Wolfe, C NW SE SE, same section, was good for 250 bbls. in sand at 2,760-85 feet. Schermerhorn & Young's No. 2 Ricketts, C SW SW NW, Section 30-2s-2w, was an 18,000,000-foot gasser in sand at 2,180-94 feet and 2,304-18 feet. Total depth was 2,930 feet.

GULF COAST

HOUSTON, Tex., Jan. 8.—The Sun Oil Co. abandoned No. 1 Guidry at High Island Dome in Galveston County, a semi-pool. It is drilling No. 5 Cade at 3,235 feet, after drilling through 960 feet of solid rock. A location has been made for No. 6 Cade. Its No. 1 Broussard, pumping 20 bbls. per day will be put on air in the hope of increasing the output.

At Big Hill in Jefferson County, another semi-pool, the Houston Oil Co.'s No. 4 Pipkin, on the southeast side of the dome, is pumping 10 bbls., having dropped off from an average of 20 bbls. per day. Its No. 8 Pipkin is drilling below 818 feet. A location has been made for No. 1 McFadden on the west side of the dome.

The Orange Production Co.'s No. 1 Gum Island in Orange County, is drilling around 1,600 feet. H. T. McCain and associates have a location for No. 1 Mary Williams, north of the pool.

The Johnson Bayou Prospecting Co. (C. N. Scott and associates) has finished its first formation test on more than 20,000 acres in the Johnson Bayou section of Cameron parish, southwest Louisiana, and is moving the specially constructed shallow drilling rotary rig over to the second location.

Yearly and others are drilling a shallow test southeast of Angleton, Brazoria County, Texas. Thomas King's test had a blowout. Eight and one-fourth-inch casing was set at 312 feet.

The North and South Oil Co. is rigging up No. 1 Allen, as an offset to the

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producer on the Lopez land in Guadalupe County.

The Big Lake Oil Co.'s No. 3 Santa Rita in Reagan County, is drilling in at about 3,055 feet. No. 4 has been spudded in located three-fourths of a mile southwest from No. 1, the producer. A derrick is up for No. 5, 1¾ mile south and east from No. 1. No. 6 is a location three-quarters of a mile southwest and No. 7 is also a location 2 miles south and west.

Operators in the Laredo region are interested in the possibility of another sand being developed in the Schott district. The Carnahan Producing & Refining Co. deepened No. 9 from 1,650 feet, the original producing horizon, to the light gravity sand at 1,920 feet and bailed it dry. The hole was then deepened to 2,285 feet, where a sand saturated with a heavy gravity oil was cored. Casing is now being set and a test will be made during the week.

KANSAS

McGinnis, Goble and others shot their No. 1 Brotton, SW cor. NE NW, Section 14-24-9, Greenwood County, with 60 quarts and it was estimated at 75 bbls. on the pump, from sand at 2,147-71 feet.

A Sedgwick County test was a failure, Royer & Ragen having abandoned their No. 1, NE cor. Section 26-26-1w, at 3,230 feet.

A Western Greenwood County well was also abandoned by Harwood & Winters at 2,461 feet. It was their No. 1 Clark, SE cor. SW, Section 2-25-8. A sand that put 150 feet of oil in the hole was picked up at 2,035-98 feet in Roth & Co.'s No. 1 Westfall, CNL SW, Section 13-29-8, in Elk County.

MEXICO

By George Blardone

TAMPICO, Mex., Jan. 5.—With work slowing down for the holidays in the fields, as usual, the completions during the past 10 days were of little moment. In the South Fields, Mexican Eagle Oil Co.'s No. 29 Los Naranjos, Lot 139 Chinampa, is good for an average daily production of some 1,200 bbls. at a subsea level depth of 1,648 feet. In the Panuco district, International Petroleum Co.'s No. 24, Lot 5 Cacalilao, is a duster at 2,508 feet; Mexican Sinclair Petroleum Co.'s No. 22, Lot 3, is a small head well at 1,950 feet; and its No. 32, same lot, is a duster at 2,003 feet. Venable and others, in Lot 1, Fraction 2-B, have the following completions: No. 1, heads 20 bbls. at 2,240 feet, practically a failure; No. 5, same, is good for 250 bbls. at 2,070 feet.

In the Topila Pool, La Corona Petroleum Co.'s No. 18 has been abandoned at 2,233 feet, and the derrick is being skidded to a new location. Cia. Pet. Financiera No. 4, Lot 8 Paciencia de Aguacate, is a salt water well at 2,365 feet.

Rumors were extant the past two days that Rich Mex Oil Co.'s No. 22, Lot 1, (4-B) Cacalilao, which was completed at 2,060 feet in November, rated good for 20,000 bbls., had gone to salt water. It appears that the report is untrue. The well is doing 4,800 bbls. free oil now, a little pocket of water having developed when it was doing around 8,000 bbls. The pinch down was a matter of precaution. No other wells nearby were affected.

Mexico is producing now some 389,000 bbls. daily, divided as follows:

	Bbls.
South Fields	169,000
Panuco-Cacalilao	190,000
Topila	12,000
Ebano	8,000
Total	389,000

These figures reflect actual production, it is true, but at this time actual and potential productions are closely allied.

Normal conditions obtain in the fields at this time, despite some printed reports north of the Rio Grande to the contrary.

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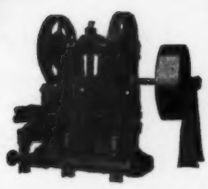

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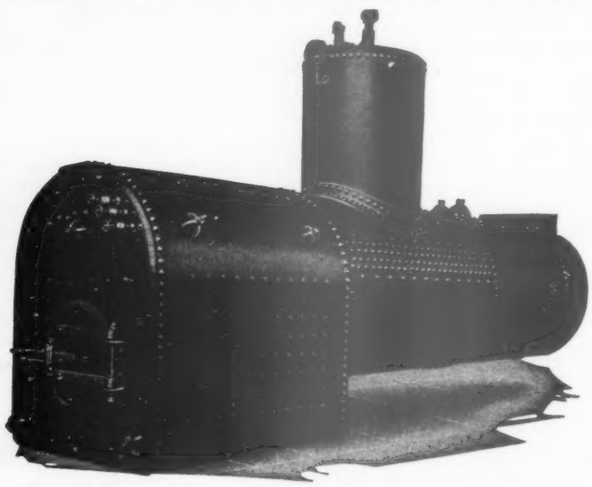

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NORTH TEXAS REPORTS MARKET IS STRONGER

FORT WORTH, Tex., Jan. 7.—Due to the better prices now obtainable for 64-66 gasoline the majority of refiners in North Texas are finding it more profitable to manufacture this grade rather than New Navy at the present quotations of 9 to 9¼ cents. The first of the week finds very little New Navy gasoline available in North Texas as some of the few plants who were devoting their output to New Navy have since changed to 64-66, thereby still further decreasing the available supply.

The 64-66 gasoline is scarce at 11½ cents as practically all of the plants are still shipping on orders placed some time ago and which will carry them well into the middle of the month, and as a consequence have very little to offer for immediate shipments. Some of the large exporters have been making inquiries the past week for additional quantities of 64-66, although no actual orders are reported having been placed. However, should additional export orders materialize within the next 10 days or two weeks, this will, of course, further strengthen the New Navy market in North Texas.

Kerosene is extremely scarce at 5 cents and diligent inquiry fails to devlop any kerosene for immediate shipment. Very little of this material is being manufactured in North Texas and the recent demands have practically cleaned up what little stocks the refiners had.

Natural gasoline still continues to show an improvement, Grade A being quoted at 8½ cents, with most of the plants anywhere from 10 days to two weeks behind with their orders.

The 32-36 gas oil is scarce at 2½ cents and 38-40 practically unobtainable at 3½ cents.

Fuel oil is being generally quoted at 90 to 95 cents. While the present demand is not so brisk, most of the plants are shipping on orders taken some time ago, and as a result keeping their stocks moving in good shape. Predictions are freely made that dollar fuel oil will be the market in North Texas within a very short period.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended December 29, totaled 652,000 barrels, a daily average of 93,143 barrels, against 1,064.000 barrels, a daily average of 152,000 barrels for the week ended December 22.

	Wk. End. Dec. 29
At Atlantic Coast Ports:	
Boston	76,000
New York	364.000
Philadelphia	75,000
Others	63,000
Total	578.000
Daily average	82,572
At Gulf Coast Ports:	
New Orleans and Baton Rouge	74,000
Daily average	10,571
Total Atlantic and Gulf Coast Ports	652,000
Daily average	93,143

According to figures collected by the American Petroleum Institute, imports of crude and refined oils at the principal ports for the week ended December 29, totaled 1,717,000 barrels, a daily average of 245,286 barrels, compared with 1,903,000 barrels, a daily average of 271,857 barrels for the week ended December 22.

	Wk. End. Dec. 29
At Atlantic Coast Ports:	
Baltimore	82,000
Boston	64,000
New York	144,000
Philadelphia	168,000
Others	200,000
Total	658,000
Daily average	94,000
At Gulf Coast Ports:	
Galveston district	495,000
New Orleans and Baton Rouge	225,000
Port Arthur and Sabine district	227,000
Tampa	112,000
Total	1,059,000
Daily average	151,286
At all U. S. Ports:	
Total	1,717,000
Daily average	245,286

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Houston Geologists Advertise Salt Dome Symposium in March

HOUSTON, Tex., Jan. 5.—The following circular letter has been sent out to approximately 600 members of the Geological Society of America, Society of Economic Geologists, Collegiate Geological Departments and geologists in general:

"Gentlemen:

"If there is a distinct type of geologic structure about which you know next to nothing;

"If there are about 60 examples of this structure in the United States, 30 in Mexico, 50 in Germany, 75 in Rumania and yet others in Russia, Algeria, Egypt and Spain;

"If most of the world's production of potash and sulphur comes from this type of structure;

"If any one of many examples of this structure contain a thousand years' supply of easily minable salt in sight;

"If these structures are still more important for their oil production, yielding most of the Rumanian production, most of the Gulf Coast production, and minor production in Germany and Mexico;

"If this type of structure offers many interesting and as yet unsolved theoretical problems;

"If in connection with these structures there has been developed in Texas and Louisiana;

"The unique Frasch (steam) process of mining sulphur; modern methods of rotary drilling; the oil fields yielding most oil per acre in the United States; extensive salt mining both by shafts and galleries and by brine wells;

"And, if, finally, in addition to a searching discussion of micro-paleontologic and allied methods of subsurface correlation with papers by Schuchert, Cushman and others, a thorough review of all published data and a complete record of a vastly greater store of hitherto unpublished data on this type of geologic structure will be presented at the Symposium on Salt Domes, American Association of Petroleum Geologists, Houston, Texas, March 27-29, 1924, will it not be worth your while to participate in these sessions and the accompanying field trips to the most interesting salt domes in Texas and Louisiana? A most cordial invitation is extended to you to attend the meetings and to bring with you your students, assistants, associates, and friends who may be interested in these symposia.

"Houston Geological Society,
"John Suman, Pres.

"Houston, Tex., Dec. 27, 1923."

In addition to the papers mentioned to be read by Cushman, Schuchert and others, special data have been prepared and will be presented to the convention by geologists who have been located in the Gulf Coast Plains region for years and have familiarized themselves with the peculiar conditions found there. The visiting scientists will be taken to the Gulf Coast producing domes for a special study of them.

The local committees are making hotel reservations for a large attendance.

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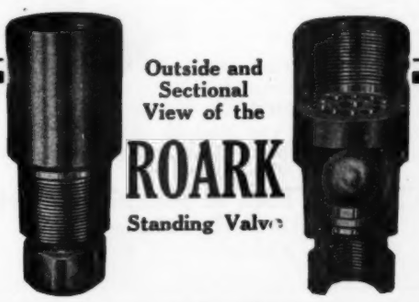
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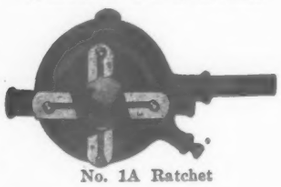
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FUEL OIL BURNERS GAIN IN COLOMBIA

Recent production of petroleum in commercially marketable quantities in Colombia has given rise to a demand for oil burners for installation in steamboat, locomotive and industrial steam boiler plants, U. S. Consul L. L. Schnare at Cartagena reports. The steadily growing number of conversions from wood or coal to fuel oil indicate that the fuel situation, which had been a big obstacle, has been greatly improved, and that the use of oil for fuel will steadily increase.

A Canadian company has established a refinery at Barranca Bermeja, on the Magdalena River, some 400 miles from Cartagena, and is reported to have on hand a considerable supply of oil in storage tanks. Also the fact that a pipe line is to be built from the northern coast to a point on the Magdalena River beyond the properties of the company, involving over $20.000,000, indicates deposits of petroleum in Colombia are adequate, and distribution facilities justify the installation of oil burners. Oil storage tanks have been installed at numerous points along the Magdalena River and others are being established to take care of the large number of river boats.

The steamboats on the Magdalena River offer the most promising field for the installation of oil burners at present, since the fuel is close at hand. Several short railroads will also probably require oil burners. The Cartagena Railway, running between Cartagena and Colmar, have converted seven of their locomotives, using an industrial type of burner which is probably not entirely suitable for locomotive service. Other lines in Colombia are the Barranquilla, the Antiaquia and the Dorada Railways, which have 8, 14 and 8 locomotives, respectively.

Numerous industrial plants in Barranquilla, Colmar, Magangue and Mompas, with the exception of the few that are equipped with internal combustion engines, offer opportunities for the installation of oil burners. Unfortunately the cost of transporting oil to Cartagena is prohibitive at present, but in the near future, with the completion of the pipe line or the deepening of the waterway, oil may be used there in the two cotton mills.

At present the consumption of fuel oil in northern Colombia is said to be about 19,000 bbls. per month, with a probable increase to 25,000 per month in the near future. Frequently installations are made with the assistance of engineers in the employ of the Tropical Oil Co. In some cases the burners have been imported from the United States; in others they have been made locally. A simple type of oil burner is best adapted to the needs of this district at the present time, because of the inexperience of the men handling and maintaining this equipment.

CHESTER SAYS WE WILL NEED OIL FROM MOSUL

Read Admiral Chester, sponsor of the famous Chester concessions, when asked recently what he was going to do with his concessions, countered: "What are you going to do with them? By 'you' I mean the American people."

The American people will some day soon, the admiral believes, wake up to the fact that the supply of oil is not sufficient for their millions of motors. He believes the country will sorely need the oil of the Mosul fields in the near future, and he is keenly disappointed that his project has not received satisfactory support in this country. He estimates that the publicity given to the Chester concessions project was easily worth $500,000, but at the same time says much of it was really British propaganda.

The Admiral said the late President Roosevelt gave him the assignment which resulted in securing the concessions from the Turkish Government.

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CANADIAN DRILLER LOST FOOT IN QUAKE

CHATHAM, Ont., Jan. 5.—A letter recently received from Kobe, Japan, bearing the date of September 20, tells of the exciting experience of a Canadian driller, J. B. Hudson, in the Japanese earthquake.

Mr. Hudson has spent nearly five years in the East, about a year in Sumatra, and the remainder of the time at Miri, Borneo. Since going to Miri, his wife and two little girls had been with him. He had not been well for some time, and on medical advice, left for Canada. The Hudsons arrived in Yokohama just at the time of the earthquake. Regarding their experiences, Mrs. Hudson writes:

"Bert (Mr. Hudson) and Betty were on land. Bert was struck on the foot by a big stone from a building, smashing his ankle and making a terrible wound. Two sailors found him before the fire reached him and he was carried to the park where he and Betty lay all night. Japanese attempted to rob him three times during the night but he had life enough in him to fight them off. Next morning he sent Betty, with two Japanese women to the Bund, where she was found by a rescue party and taken to the Empress of Australia. Bert was found by Europeans and taken to the same steamer.

"The 'Empress' stood by and rescued thousands. Our boat, the 'Korea Maru,' did nothing to rescue people, in fact, held a gun on Europeans to prevent them from entering their launch. Bert was given first aid. He stayed one night on the 'Empress' and was transferred to the 'Jefferson' and was then taken to Kobe Hospital. I did not find out where he and Betty were until Tuesday, and did not get to him until Friday morning. They had amputated his foot but told him he could not live, as gangrene had set in. However, he is much improved, so much so that I have booked passage home on the 'President Taft.' I sent the girls home on the first relief boat, as this place is so congested, and food is scarce. Then I was afraid of disease, as the bodies in Yokohama are still unburned.

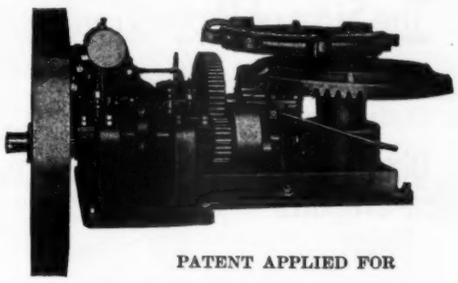
"Our steamer did the shimmy, frantically bumping the wharf and other boats, but nobody on the boat was injured. We saw Yokohama burned with Bert and Betty in it. They lay in mud and water behind a door which Betty found and dragged to dad for protection against the fire. Rather awful."

P. & R. TULSA OFFICES COMBINED WITH PRAIRIE

The Tulsa general offices of the Producers & Refiners Corp. have been moved to the Exchange National Bank building, occupying the same floor as the Prairie Oil & Gas Co. According to present plans of the the two companies the production interests of both companies will be consolidated so far as possible. The consolidation of the offices does not involve any change in the refining and marketing ends of the Producers & Refiners Corp. The consolidation follows the recent action of the Prairie Oil & Gas Co. in acquiring a controlling stock interest in the Producers & Refiners Corp.

ITALY CONSERVING OILS

An important step has just been taken by the Italian Government to increase the production of benzol and toluol by a decree prohibiting gas works which have an annual production of more than 1,000.000 meters from selling gas from which light oils suitable for the production of benzol and toluol have not been recovered in an amount equivalent to 15 grams per meter. The same obligation is imposed on manufacturers of metallurgical coke. Gas works, coke ovens, and coaltar distillers are prohibited from selling coal tar for direct use which has not previously been freed by distillation of all the products that can be distilled up to a temperature of 170 degrees Centigrade.



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California's Flood Measured in Months Rather Than Years

Just how California itself regards the present oil situation there may be of interest as revealed in the Mining & Oil Bulletin issued by the State Chamber of Mines and Oil from which these extracts are taken:

Exceptionally rapid decline in production from the high-gravity wells in the southern California fields is becoming more evident every day, confirming the early estimates made last spring.

The lives of many of the individual wells in the three important fields in southern California are measured in months rather than years. The flush production of all of them will soon be gone. In the low-gravity producers in the Salt Lake, Los Angeles, Whittier and Fullerton fields, wells have been pumping for from 20 to 30 years. None can tell if the new fields will do this or will drop rapidly when pumped. The Montebello and Placetina fields, producing medium-gravity oil, maintained a fairly steady production over a number of years. The rapid decline of the high-gravity Santa Fe Springs, Huntington Beach and Long Beach fields serves to illustrate once again the fact that light-oil fields quickly pass as major factors in oil production, especially when closely drilled.

Town-lot drilling has characterized the three great high-gravity fields of the Los Angeles basin and has so accentuated their rapid decline that the passing of flowing wells in those fields seems assured for the year 1924. Only in rare instances and from the deepest zone at the Long Beach Field can a 5,000-bbl. well now be brought in.

Production Declining

Production in the Long Beach Field is definitely on the decline, but because of the occasional bringing in of large producers, it is probable that production in this field may not fall off as rapidly as at Santa Fe Springs. Since it did not rise as high as at Santa Fe Springs, it probably will not fall as fast.

Only one well producing more than 2,000 bbls. per day has been brought in at Huntington Beach during the last two months. No well now drilling can be expected to produce as much as 2,000 bbls.

Early in October the total production of the Torrance Field was about 14,000 bbls. daily. By November 21 its daily production had increased to 30,000 bbls. It is possible that this phenomenal increase may be continued in December for in an area of less than 60 acres, 31 new wells will be completed. These wells are all being drilled in the district that has caused the increased production of the field, but as this is a closely-drilled section, it does not seem probable that the total production of the field can exceed 40,000 to 45,000 bbls. daily. After the completion of these wells, it is expected that the field will have difficulty in maintaining its production record.

Except at the northwest end, where the schist and older rocks were found, no attempts have as yet been made to find a second or deeper zone in the Torrance-Redondo Field.

In the southwest end of the field, the discovery of a deeper sand is generally expected. When this happens, the field should again increase in production. However, such an increase cannot be expected until next May or even later. By that time the decrease in production at Santa Fe Springs, Long Beach and Huntington Beach will probably be so great that the increase in the Torrance-Redondo Field will not be an addition to a rising flood of oil but will rather sustain an ebbing tide.

Very little can be said definitely about wildcat wells and unproven territory as factors in the situation. Those who attempt to introduce such factors are apt to be guided more by their hopes or interests than by a well-reasoned opinion.

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SALT CREEK OFF MAP, NOW TO BE MIDWEST

CASPER, Wyo., Jan. 5.—The Salt Creek post office has been officially changed. The old "Home Camp," as the town of old Salt Creek, built and maintained by the Midwest, has been commonly known, is no longer to be known as Salt Creek for the Post Office Department has taken that title from the main city of the Salt Creek Field and bestowed it upon a scattered collection of shacks far to the south and not even inside the proven area of the field. Old Salt Creek will hereafter be known as Midwest and all mail matter must be so addressed instead of to Salt Creek.

The change was made because the railroad ends at the point where the new Salt Creek post office is located. Here the promoters hope to build a rival town. The railroad should be able to run trains over the new grade by spring. At present there are two busses each way daily between Salt Creek and Casper. Another bus is making trips between Buffalo and Sheridan, leaving only 70 miles between Salt Creek and Buffalo which is expected to be closed with a similar conveyance next summer. At present to reach Sheridan from Casper, the trip by rail would mean going into Nebraska, South Dakota and back into Wyoming.

PUBLIC DOMAIN OIL PRODUCTION DOUBLED

In a New Year's statement, Secretary of the Interior Work says:

"The total value of the individual and tribal property of the Indians, the guardianship of which is administered by the Interior Department, increased from $727,124,000 in 1922 to $1,010,000,000 in 1923. The income of the Indians from this estate was $23,957,000 in 1922, while in 1923 it advanced to $38,679,000, a gain of $14,722,000.

"The production of oil on the public domain has almost doubled the past two years, the total number of barrels taken from wells in 1922 being 18,236,000, compared with 28,443,000 in 1923. Royalty oil, including naval reserves turned over to the Government through leases has bounded upward from 1,292,000 barrels in 1921 to 7,647,000 barrels in 1923. The receipts last year were $8,071,000 and in the previous year they were $4,768,000.

GASOLINE STORAGE IN BRAZIL

The Brazilian Minister of Transportation has authorized the inspector of ports to make arrangements with the dock company of Santos relative to the application of the Anglo-Mexican Petroleum Co. for permission to install at that port a large storage tank for handling gasoline in bulk. Since Santos and Sao Paulo are highly competitive markets for petroleum products, it is possible similar applications may be made by other marketing companies if the Anglo-Mexican Petroleum Co. is successful.

IRISH DISTRIBUTION OF OIL

Gasoline and oils are distributed in the Irish Free State from central storage in Dublin to provincial garage keepers and dealers by motor truck. It is estimated 75 per cent of the gasoline sold reaches the consumer in tins. Lubricating oil is distributed in much the same manner as in the United States. Garages sell to consumers either in bulk or by the tin, the standard tin being the 1-gallon size.

SWISS FIND GASOLINE BEST

The Swiss Government has been making persistent efforts to find a successful process whereby alcohol can be used as a substitute for gasoline. Thus far experiments under the joint direction of the Swiss Federal Department of Alcohol and the technical section of the Military Department have failed to discover a motor fuel better or cheaper than gasoline.

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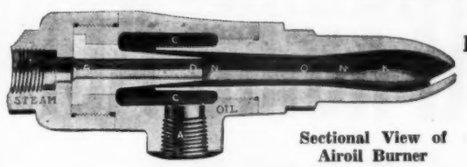

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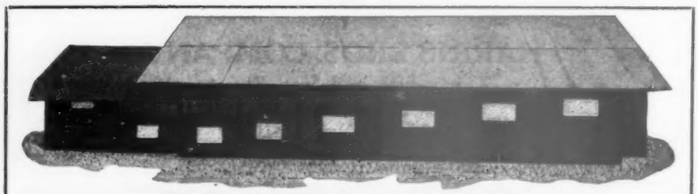

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RANK GASOLINE FOURTH IN VALUE OF EXPORTS

WASHINGTON, D. C., Jan. 7.—While unmanufactured cotton as usual occupied first place in value of United States exports at the end of the third quarter of 1923, continued heavy exports of coal, automobiles and gasoline kept those commodities secure in their hold on second, third and fourth places among American exports, according to the analysis of the foreign trade of the United States issued by the Foreign Commerce Department of the Chamber of Commerce of the United States.

Increased exports of wheat during the third quarter gave that staple sixth place, the highest rank it has attained during the year to that time. A year ago the value of wheat exports was second only to cotton.

Prominent among the gains in value of exports over the same nine months of 1922 were mining, oil well and pumping machinery, 43 per cent; internal combustion engines, 26 per cent; automobiles and parts, 69 per cent; refined mineral oils as a whole, 6 per cent; gas and fuel oil, 32 per cent; gasoline, 11 per cent; crude petroleum, 24 per cent.

Sixty per cent of the principal exports went abroad in larger quantities during the first nine months of 1923 than during the corresponding period of last year. Motor trucks gained 117 per cent, tractors 107 per cent, passenger automobiles 98 per cent, gas and fuel oil 77 per cent, crude petroleum 69 per cent. Two-thirds of our chief exports bettered their prewar averages.

Nearly all chief imports gained in both value and quantity over the same period of 1922. One of the largest increases in value was in the imports of gasoline, 108 per cent. Heavy quantity gains were registered by imports of refined petroleum products, 281 per cent; and gasoline 128 per cent. Crude petroleum imports declined 30 per cent in quantity.

FORCING MIXED FUEL ON FRENCH TAXICABS

The French Government's plans for forcing the sellers of motor fuel to take certain quantities of the national alcohol stocks to be mixed with motor fuel are developing slowly. A comptoir has been created among the sellers of gasoline, and began actual work early in November. This body receives the alcohol deliveries from the Government and arranges for the mixing of the so-called "carburant national," and its delivery to the oil interests in such proportion as their purchases require. Up to the present time the Government has not turned over to the oil interests as large amounts of alcohol as it has a right to under the legislation. Deliveries of alcohol occur month by month, and amounts which the Government does not deliver in one month can not be made up by increasing deliveries later. At the present time the mixture of alcohol and gasoline which is being delivered is turned over to the big omnibus companies and taxicab companies. Thus far it has not been necessary to push this mixture on the market for use by private automobilists.

OIL'S ADVANTAGE OVER COAL

U. S. Consul J. F. Jewett, at Birmingham, England, reports an increasing use of fuel oil for industrial purposes, which is due in part to the effort that is being made to lessen the smoke nuisance—common to most industrial cities of Great Britain. Another reason is the improvement in facilities for transporting and storing oil. The advantages of oil over other fuels have been given some publicity in the Birmingham area. One firm, making public the results attained with its oil installation, reported that to obtain the same evaporation of water requires approximately two tons of coal against one ton of fuel oil; and that, in addition to cleanliness and ease of handling, the use of oil eliminates expenses of ash handling, tip charges and additional flue cleaning.

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Geological Surveys, Appraisals for Taxation or Financing
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Detailed Operations in Western Fields for December, 1923

SUMMARY OF ALL FIELDS

Wells Completed

Fields—	Comp.	Prod.	Dry	Gas
Eastern	282	738	41	89
Lima	30	632	4	2
Indiana	13	497	6	0
Central Ohio	88	110	29	57
Kentucky-Tennessee	135	2,093	43	4
Illinois	16	158	5	1
Kansas	32	745	16	6
Oklahoma	277	27,795	95	36
North Texas	117	7,141	29	4
East Central Texas	117	80,187	37	2
N. Louisiana-Arkansas	95	12,380	15	11
Gulf Coast	55	7,975	19	2
Wyoming	51	10,258	8	4
Montana	17	595	6	1
Total December	1,325	151,304	353	219
Total November	1,450	646,275	340	214
Difference	125	394,971	13	5

Rigs and Wells Drilling

Fields—	Rigs	Drg.	Total
Eastern	151	308	459
Lima	6	37	43
Indiana	3	24	27
Central Ohio	38	118	156
Kentucky-Tennessee	8	209	217
Illinois	3	12	15
Kansas	46	134	180
Oklahoma	194	996	1,190
North Texas	73	203	276
East Central Texas	13	144	157
N. Louisiana-Arkansas	90	166	256
Gulf Coast	77	279	356
Wyoming	91	345	436
Montana	21	163	184
Utah	1	24	25
Mississippi	2	20	22
Alabama	0	11	11
Georgia	1	4	5
Florida	5	9	14
Total December	823	3,206	4,029
Total November	931	3,394	4,325
Difference	108	188	296

Note—In the following report the Section, Township and Range are given first; then the farm, the owner, the serial number of the well and the initial production of the well. The rigs and drilling wells are set forth in a similar manner. In lines where the Section, Township and Range are missing the wells are located in the Sections, Townships and Ranges which appear next above in the report.

OKLAHOMA FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Washington-Nowata-Rogers	0	0	0	0
Osage	31	5,215	5	9
Tulsa	17	937	6	3
Okmulgee	26	4,370	12	2
Okfuskee-Hughes-Seminole-McIntosh	27	3,980	10	5
Muskogee-Wagoner	8	0	8	0
Creek	30	1,623	14	3
Pawnee	8	192	1	0
Payne	2	0	2	0
Kay	20	1,843	2	0
Garfield-Noble	36	5,793	6	0
Carter	38	3,537	7	0
Stephens-Cotton	20	305	10	4
Miscellaneous	14	0	12	2
Total December	277	27,795	95	36
Total November	239	52,900	89	28
Difference	38	25,105	6	8

Summary of New Operations

County—	Rigs	Drg.	Ttl.
Washington-Nowata-Rogers	0	0	0
Osage	35	126	161
Tulsa	15	21	36
Okmulgee	27	55	82
Okfuskee-Hughes-Seminole-McIntosh	31	90	121
Muskogee-Wagoner	3	16	19
Creek	20	83	103
Pawnee	4	34	38
Payne	1	9	10
Kay	10	115	125
Garfield-Noble	8	96	104
Carter	10	118	128
Stephens-Cotton	2	21	23
Miscellaneous	28	212	240
Total December	194	993	1,190
Total November	231	952	1,183
Difference	37	44	7

WELLS COMPLETED

OSAGE COUNTY

5-20-12 Oklahoma Natural Gas 630.... gas
32-21-12 Oklahoma Natural Gas 633.... gas
8-22-11 Owen Osage Oil 258 ..... gas
27-29-11 J. R. Hadley 2 ..... gas
34-22- 8 Mutual Oil 9 60
17-26- 6 Comden Oil & Gas 2 ..... dry
Dry and abandoned 38
23-27- 8 Skelly Oil 11 100
19-24-11 Owen-Osage Oil 257 ..... abd
2-23-11 Owen-Osage Oil 260 ..... gas
16-27-10 Owen-Osage Oil 259 ..... gas
28-24-11 Homaokla Oil 8 15
22-25-12 Owen-Alleghany 2 ..... abd
27-23-11 Hineman & Marshall 5 15
Hineman & Marshall 6 50
11-22-10 Gilliland & Steele 3 30
8-26-12 F. A. Gillespie 21 15
17-25- 9 Petroleum Drilling 6 1300
29-22- 8 Red Bank Oil 2 ..... gas
28-22- 9 Tidal Osage 1 2000
31-26-11 Lease No. 50, Sand Springs Home 3 ..... dry

Lease "O," Sand Springs Home 4 42
28-20-12 Peer Oil 3 500
Munn Bros. et al 4 980
35-22- 8 Sand Springs 76 ..... gas
9-22-11 Owen-Osage Oil 256 ..... gas
34-29-11 Indian Ter. Ill. Co. 315 ..... gas
17-24- 9 No. 1 Oil 6 ..... gas
23-23-10 Gilliland Oil 3 40
26-23-11 Finance Oil 3 15
..... dry

Wells completed 31
Production 5215
Dry and abandoned 5
Gas 9
Gas production 43,000,000

TULSA COUNTY

9-17-14 Perryman, Dillard et al 1..... gas
1-18-12 River Bed, Tidal Oil 1-A..... dry
12-18-12 Tiger, West et al 5 200
10-19-10 Lester, Mutual Oil 1 ..... abd
27-19-11 Gaylord, Minshall et al 3 30
33-19-14 Hooks, Pennington 2 10
6-19-12 Bruner, Sand Springs Home 1 50
27-16-12 Coleman, Independent O. & G. 3 6
34-16-12 Vare, Sheridan Oil 1 175
25-19-14 Grant, Webster et al 1 ..... dry
Grant, Webster et al 2 ..... abd
Grant, Webster et al 3 ..... abd
Grant, Webster et al 4 ..... abd
34-17-12 Lewis Tank Farm, Prairie O. & G. 2 ..... gas
20-17-14 Steel, Noble Oil & Gas et al 1. dry
6-19-12 Spring, Sand Springs Home 2. gas
33-19-14 Hooks, Pennington et al 1..... 10
6-19-12 Bruner, Shaffer O. & R. 1..... 437

Wells completed 17
Production 937
Dry and abandoned 6
Gas 3
Gas Production 19,000,000

OKMULGEE COUNTY

6-15-15 Jefferson, Gilliland Oil 1..... 60
22-15-12 Shepard, Jordan & Ashley 1.. dry
23-15-11 Hill, Jennings Bros. 2..... 20
22-16-12 Wills, Pulaski Oil 1 80
27-16-12 Coleman, Margay Oil 1 ..... dry
8-11-12 Summers, Moffett et al 1 50
6-15-15 Jefferson, Gilliland Oil 2 60
36-14-14 Lewis, Enterprise Oil 5 25
19-14-15 Rentie, Vogler & Lightner 1.. abd
15-12-13 Bruner, Harry Diamond 10... dry
22-15-11 Hill, Frank Moore et al 2 ... 150
33-15-11 McIntosh, Sheldon 1-A ..... dry
32-14-14 Perryman, Archer Bros. 1.... 150
31-15-14 Charles, Wallace et al 3 .... abd
3-14-12 Norris, C. S. Sands 2 ..... abd
22-16-12 Willis, Sheridan Oil 4 100
27-16-12 Coleman, Independent O. & G. 3 ..... 17b
33-16-12 Friday, Sam Bright 1 ..... abd
34-16-12 Vanes, Sheridan Oil 1 ..... abd
25-14-15 Walker, Armstrong et al 2... abd
22-16-12 Wills, Sheridan Oil 3 200
24-16-12 Tiger, Oklahoma Natural Gas 6 ..... dry
2-15-14 Anderson, Sommerville 6 3300
3-14-12 Harris, Claypool et al 1-A .... dry
18-11-12 Fish, Wiser Oil 2 ..... dry
11-11-13 Bruner, King et al 1 ..... gas

Wells completed 26
Production 4370
Dry and abandoned 12
Gas 2
Gas production 16,000,000

OKFUSKEE, HUGHES, SEMINOLE AND McINTOSH COUNTIES

12-10- 9 Foster, Independent Oil & Gas 1 ..... dry
12-10- 9 C. Foster, Independent O. & G. 1 ..... dry
16-12-17 Keys, J. E. Weible 1 ..... abd
21-12-17 Dyer, Bynum et al 1 ..... dry
30-12-10 Harjack, Blakely et al 1 ..... dry
21-10- 8 Harjo, Jarvis & Holm 1 ..... dry
23- 7- 7 Carolina, R. H. Smith 1..... 40
4-13 8 Colbert, Skelly Oil 1 ..... gas
9-13- 8 Riley, Gypsy Oil 1 350
13-11-11 Smith, Sinclair O. & G. 2..... 60
20-12-14 Hawkins, Jordan & Ashley 1.. abd
13-11-11 Barnett, Waite Phillips 6..... gas
24-11-11 Barnett, Kingwood Oil 4..... gas
6-12-11 Thompson, Independent Oil & Gas et al 1 ..... gas
4-13- 8 Saryokiche, Link Oil 1..... 275
23- 8-10 Alexander, Independent O. & G. 1 850
15-10- 8 Bruner, Cromwell et al 1 ..... dry
28- 8- 8 Foster, Freeman & Crosbie 1.. 350
32- 8- 8 Long, Dixie Oil 3-A 27
Long, Independent & Atlantic O. P. 3 39
35-11-11 Jackson, Atlantic O. P. 1..... 264
11-11-13 Bruner, King et al 1 350
18-11-12 Fish, Wiser Oil 2 ..... gas
29-12-11 Stubblefield, Anglo-Tex 1..... gas
1-12-11 Fisher, Burton & McClain 1.. dry
Fisher, Burton & McClain 2... 1100
29- 9-12 Colbert, Arkansas Nat. Gas 1. dry

Wells completed 27
Production 3980
Dry and abandoned 10
Gas 3
Gas production 42,000,000

MUSKOGEE-WAGONER COUNTIES

24-14-16 Tipton, Roxaline Oil 3..... dry
14-13-15 McNac, Beggs & Evans 2..... dry
19-14-15 Rentie, Ohiokla et al 3..... dry
8-14-19 Kelly, J. F. Ledbetter 2..... dry
20-14-19 Harris, Blytheville O. & G... dry
29-15-15 Vandeventer, Bradley et al 4.. abd
25-14-15 Walker, Armstrong et al 3... abd
2-15-16 Grayson, Ice 2 ..... abd

Wells completed 8
Production 0
Dry and abandoned 8
Gas 0
Gas production 0

CREEK COUNTY

32-15-10 Ansil, Wilcox Oil & Gas 4.... dry
32-17- 8 Washington, O. P. & R. 1.... gas
8-15- 8 Robertson, Hiram Oil & Gas 6 80
34-16- 8 Larnie, Maitland et al 1..... dry
36-18- 7 Jones, Magnolia Pet. 1..... dry
8-18- 7 Musselman, Magnolia Pet. 1.... dry
9-16-10 Pepper, C. Williams et al 1.. abd
33-17- 8 Hawkins, Wilcox & Oswalt 1.. dry
19-17- 9 Wright, Pure Oil 1 ..... dry
23-18- 8 Gayur, Sidwell Drg. 1 ..... gas
35-18- 8 J. F. Quinn 1 ..... dry
9-16- 8 Meyers, Red Bank Oil 6..... dry
22-16- 8 Wilson, Peters Oil 2 200
16-16- 9 Williams, Hammett et al 4.. 60
12-14- 8 Bruner, Tibbons 1 60
20-16- 9 Cobb, Calvin et al 1 60
24-17- 8 Green, Lima Oil & Gas 1.... 75
16-16- 9 Barnes, Moore et al 2 ..... gas
5-18- 7 Atkins, Chas. Page 24 50
16-15- 8 Fish, Eastern Oil 1 35
4-14-10 Brown, Phillips Pet. 1 8
9-15- 8 Beaver, Chapman et al 2..... abd
5-15- 9 Tiger, Carman et al 2..... dry
23-16- 8 D. B. Mason 3 450
32-16- 8 McKinney, Prairie Oil & Gas 1 450
35-14- 8 Beaver, Independent Oil & Gas 6 ..... dry
28-15-10 Harry, Mt. Fork Oil 1 50
21-16- 8 Williams, Hiram Wilson 1 .... dry
16-16- 9 Pike, Moore et al 1 15
9-14- 8 Ahlaquanna, Cohen et al 1... abd

Wells completed 39
Production 162b
Dry and abandoned 14
Gas 3
Gas production 90,000,000

PAWNEE COUNTY

5-23-5e Phillips, Columbine Oil 1 5
32-23-3e Robedeaux, Magnolia Pet. 2.. dry
16-20- 6 School Land, Stone & Braden et al 4 40
33-23-3e Miller, Watchorn Oil & Gas 10 40
31-21-8e Anglin, J. B. Grieves 4..... 40
4-20- 7 Hallett, Mason & Lyons 1.... 35
16-20- 6 School Land, Magnolia Pet. 1.. 11
17-20- 6 Truesdell, Carter Oil 2 ..... 4b

Wells completed 8
Production 152
Dry 1
Gas 0
Gas production 0

PAYNE COUNTY

15-19-6e Ridinger, Twin State Oil 1... abd
16-19-6e School Land, Cosden O. & G. 2 abd

Wells completed 2
Production 0
Abandoned 2
Gas 0
Gas production 0

KAY COUNTY

33-25-1w Russell, Marland-Cosden 1-A.. 26
34-25-1w Endicott, Comar Oil 9 ..... 13b
Endicott, Pennok Oil 6-B..... 235
Unknown, Comar Oil 1 76
34-25-1w Beverlin, Comar Oil 17..... 20
Beverlin, Comar Oil 18-A..... 124
Endicott, Comar Oil 4 408
34-25-1w McDaniel, Blackwell O. & G. 4-A 10
22-27- 5 Skelly-Phillips 3 40
34-25-1w McDaniels, Blackwell O. & G. 7-B 205
Beverlin, Comar Oil 12..... 20
McKee, McCaskey & Wentz 20 140
32-29- 5 McKee, McCaskey & Wentz 42 118
Bippus, Woods Oil 1 ..... dry
34-25-1w Endicott, Comar Oil 3-C..... 40
Beverlin, Comar Oil 21-A..... 55
31-27-2e Garrett, Comar-Gypsy 1 73
14-26-1w Gillespie, Blackell O. & G. 6.. dry
34-25-1w Beverlin, Comar Oil 16..... 102
36-25-1w Kappenbrink, Comar Oil 4..... ?

Wells completed 20
Production 1843
Dry 2
Gas 0
Gas production 0

GARFIELD-NOBLE COUNTIES

2-24-1w Blubaugh, Comar Oil 7-B 171
Blubaugh, Comar Oil C-2A..... 424
3-24-1w Carmichael, Comar Oil 6-A.. 102
Carmichael, Comar Oil 9-A.. 235
Carmichael, Comar Oil 9-B.. 179
10-24-1w Novotny, White Eagle O. & R. 9 365
2-24-1w School Land, Griffith & Ash 1 180
Gaume, Comar Oil 16 ..... dry
Blubaugh, Comar Oil 16-A.. 71
Blubaugh, Comar Oil 20 528
3-24-1w S. Pettit, Comar Oil 19-B.... 297
19-22-3w West Kesner, Sinclair O. & G. 17 8
32-23-3e Robedeaux, Magnolia Pet. 3... 5
3-24-1w Carmichael, Comar Oil 24... dry
Carmichael, Comar Oil 24-A.. 23
11-24-1w Rence, Healdton Oil & Gas 11 6
Rence, Healdton O. & G. 8-B. 254
Rence, Healdton O. & G. 12-A. 53b
2-24-1w Clark, Gypsy Oil 77 300
10-24-1w Evans, Gypsy Oil 22 250
2-24-1w Clark, Gypsy Oil 75 100
3-24-1w Pettit, Comar Oil 9-B 350
Pettit, Comar Oil 24 165
32-23-3e Miller, Watchorn O. & G. 3.. 720
2-24-1w Clark, Gypsy Oil 33 35
Clark, Gypsy Oil 64 35
3-24-1w Ruzek, Comar Oil 13-A..... 125
10-24-1w Novotny, Prairie O. & G. 7-B 165
11-24-1w Rence, Healdton O. & G. 8-A 95
21-24-1w Burch, Champlin Ref. 1 8
9-21-3w King Rabbit's Foot 2 ..... dry
2-24-1w Gaume, Comar Oil 11 ..... abd
12-24-3e Miller, Texas Co. 1 ..... abd
2-24-1w Blubaugh, Comar Oil 21 20
11-24-1w Rence, Healdton O. & G. 7 .. dry

Wells completed 36
Production 5793
Dry and abandoned 6
Gas ..... b
Gas production 0

CARTER COUNTY

25-2s-3w Fee, Westheimer & Daube 1.. 315
22-2s-3w Carpenter, Humble O. & R. 1 dry
25-2s-3w Taylor, Magnolia Pet. 3 ..... gas
6-3s-2w Palmer, Patsy Oil 6 ..... gas
15-4s-2w Woodruff, Magnolia Pet. 25.. abd
32-4s-2w Fee, Baker-Strawn 4-A 30
25-2s-3w Davis, Southwestern Pet. 2... 100
13- 1-3w Newberry, Pauls Valley O. & G. 3 150
24- 1-3w Bradfield, Texas-Pacific C. & O. 1 ..... gas
16-4s-2w Kalish, Westheimer & Daube 8 ..... abd
32-4s-2w Dillard, Wolverine Oil 87 70
Dillard, Wolverine Oil 12 30
25-2s-3w Lahman, Atlantic Oil & Prod. 2 12
McKinney, Westheimer & Daube 1 ..... gas
30-2s-2w Sparks, Cotton Belt Oil 5..... 300
20-2s-2w Sparks, Schermerhorn 4..... 370
9-4s-2w Walker, Humble Oil & Ref. 11 gas
35-2s-3w Frazier, Healdton Pet. 1..... 25
9-4s-2w Lowery, Simpson 1 ..... dry
9-1n-3w Gann, Magnolia Pet. 5 ..... 60b
Gann, Magnolia Pet. 4 70
10-1n-3w Gibson, Magnolia Pet. 3..... 28
25-2s-3w Lahman, Magnolia Pet. 4..... 75
26-2s-3w Lowery, Magnolia Pet. 1..... gas
30-2s-2w Sparks, Schermerhorn & Young 3 115
31-2s-2w Dings, Merrick 3 ..... gas
Bennett, Merrick 11 80
Johnson, Texas Co. 2 50
5-3s-2w Cobb, Merrick 1 40
15-4s-2w Woodruff, Magnolia Pet. 18... 200
22-4s-2w Dillard, Wolverine Oil 29.... gas
25-2s-3w Folsom, Schermerhorn 2..... 157
17-5s-1e Johnson, Magnolia Pet. 4..... gas
4-5s-1e Westheimer & Daube, Joe Cook Oil 1 ..... abd
9-4s-2w Walker, B. A. Simpson 2..... abd
26-3s-1w Willis, Magnolia Pet. 1..... 600
24-2s-3w Harris, Wirt-Franklin 6..... 110

Well's completed 2b
Production 3537
Dry and abandoned 7
Gas 1
Gas production 8

STEPHENS AND COTTON COUNTIES

26-2s-6w Chandler, Magnolia Pet. 3... dry
23-3s-7w Price, Empire Gas & Fuel 1.. dry
30-1n-8w Funk, Carter Oil 5 55
Maxey, Colene Oil 2 55
25-1s-9w Brooks, Magnolia Pet. 1..... 100
30-1n-8w Maxey, Gypsy Oil 6 ..... gas
2- 2-5w Simms, Sappington et al 2... 100
18-1n-4w Chism & Graham, Malcona Oil 1 ..... abd
2-2s-5w Dillard, Magnolia Pet. 3..... 5
6-2s-4w Doak, Magnolia Pet. 2 5
30-1n-8w Funk, Magnolia Pet. 2 5
2-2n-5w Rigdon, Sappington 1 ..... gas
19-2s-7w Brown, Magnolia Pet. 3 ..... dry
25-2s-6w Damron, Macwood Oil 2 ..... abd
24-1s-9w Armstrong, Hamon et al ..... abd
5-1s-8w Hood, Choptow et al ..... gas
18-1s-8w Johnson, Sun Ray Oil 5..... dry
Franklin, Ash Bros. 1..... abd
20-1s-8w Bartley, Magnolia Pet. 2 ..... dry

Wells completed 30
Production 305
Dry and abandoned 10
Gas 4
Gas production 32,500,000

MISCELLANEOUS

Pontotoc County—
16-4-6e McClure, American O. & R. 1.. gas
33-5- 8 Shields, Homaokla Oil 3..... dry
Comanche County—
29-1-12w Bentley, Bentley 1 ..... abd
Jefferson County—
23-3s-7w Price, Empire G. & P. 2..... dry
25-6s-6w Spring, Kilgore et al 1 ..... dry
Grady County—
16-5n-8w Payton, Concord Oil 1 ..... dry
Beckham County—
16-9n-23w School Land, Magnolia Pet. 1 abd
Marshall County—
22-6s-4e Bowman, Humble O. & R. 1.... abd
Grant County—
26-27-7w Bepire, Walters O. & G. 1.... dry
26-27-3w Snouffer, Blackwell O. & G. 1 gas
McClain County—
36-7-4w Barnett, Washington Dev. 1... abd
Garvin County—
18-3-3w Davison, Haynes et al 1 ..... abd
Tillman County—
35-3s-16w Holland, Quanah Oil 2 ..... dry
Johnston County—
29-3s-4e Beems, Co-Operative Oil Co. 1 abd

Wells completed 14
Production 0
Dry and abandoned 12
Gas 2
Gas production 15,500,000

OSAGE COUNTY

Rigs

27-22-10 Tidal-Osage Oil 16.
28-20-11 Sand Springs Home 4.
27-29-11 J. R. Hadley 3.
7-26-11 New England O. & P. L. 1.
24-25-11 Phillips Pet. 6.
34-25-11 Devonian Oil 8.
20-29- 9 Winona Oil 3.
26-26- 8 Connell Pet. 1.
21-24- 9 Tidal Oil 2.
26-24- 9 Marland Refining 9.
Tidal-Osage & Comar 3.
4-25- 8 Zook & Barnes 1.
17-25- 9 Foster, Davis & Landon 7.
1-22- 9 Atlantic Oil Prod. 5-A.
13-23- 8 Peters Oil 29.
20-23- 8 Marland Refining 3.
29-23- 8 Red Fork Oil 3.
Marland Refining 1.
17-23- 9 White Oil 1.
10-21- 9 Penn-Osage Oil 7.
17-29- 6 Phillips Petroleum 5.
4-26- 6 Tidal-Osage 10.

6-26- 6 Lorraine Petroleum 16.
16-26- 6 Producers & Refiners 13.
35-23- 7 Gypsy Oil 10, 11.
33-28- 5 Waite Phillips 1.
Prairie Oil & Gas 1.
34-28- 5 Waite Phillips 1.
1-26- 5 I. D. Simons 7, 13.
25-27- 5 Skelly-Phillips 2, 3.
25-27- 5 Mid-Kansas Oil & Gas 13.
Roxana Petroleum 4.
Wells Drilling
27-20-12 Superior Oil et al 5.
Oklahoma Natural Gas 632.
28-20-12 Peer Oil 2.
Westland Oil 5.
29-21-12 Barnsdall Oil 16.
19-22-11 Riverland & Carter Oil 4.
31-20-11 Sand Springs Home 1.
5-21-11 McKinney, 1-A.
6-21-11 C. W. Titus 3
28-28-11 Owen-Osage Oil 1.
19-24-11 Owen-Osage Oil 265.
30-28-10 American Pipe Line 89.
22-26- 9 Peters Oil 1.
16-24- 8 Osage Oil & Ref. 1.
32-24- 8 Mutual Oil 23-B.
3-25- 8 Seamen Oil 3.
27-25- 9 Sim Sitrin et al 21-A.
29-22- 8 Thompson & Black 1.
4-23- 9 C. B. Peters 11.
32-28- 5 Mid-Kansas Oil & Gas 1.
23-27- 5 Phillips-Skelly 4-A.
35-27- 5 Mid-Kansas Oil & Gas 12.
Shut Down
24-22-12 Andes Oil & Gas 1.
1-22-10 Riverland Co. 1-A.
2-22-10 Riverland Co. 5.
11-22-10 Gilliland Oil 4.
26-23-10 Rex Pyramid 7.
34-23-10 Waite Phillips 1.
35-23-10 C. W. Titus 8.
9-22-11 Owen-Osage 251.
28-22-11 Branstetter 1.
17-23-11 Heinerman-Marshall 6.
8-20-10 Mooney et al 2.
31-20-11 Sand Springs Home 4.
23-21-10 Tidal-Osage & Titus 1.
6-21-11 C. W. Titus 4.
9-28-12 Owen-Osage Oil 1.
31-29-13 Jennings 1.
34-25-11 Devonian Oil 7.
25-24- 9 Winona Oil 1.
27-25- 8 Atlantic Oil Producing 2.
29-25- 8 Texas Co. 2.
8-22- 9 Atlantic Oil Producing 2.
13-23- 8 Twin State Oil 5.
20-28- 6 Phillips Pet. 1.
3-26- 6 Kay County Gas 1.
6-26- 6 Tidal-Osage Oil 15, 16.
8-26- 6 Cosden Oil & Gas 8.
19-27- 6 Phillips-Skelly 13.
Gypsy Oil 10, 13, 14, 7.
31-25- 7 Vickers & Higgens 1.
1-26- 5 I. D. Simons 14.
23-27- 5 Phillips-Skelly 3, 6, 7, 11.
Skelly Oil 2, 3, 5, 6, 7, 8, 13, 14, 15, 16.
Phillips 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16.
Gypsy Oil 6, 9, 10, 11, 12, 13, 14, 15, 16.
24-27- 5 Phillips-Skelly 9, 10, 11, 13, 14.
Gypsy Oil 13, 14, 16.
25-27- 5 Skelly-Phillips 3.
26-27- 5 Phillips-Skelly 3, 6, 7, 9, 10, 11, 1, 2, 5, 9, 10, 13, 14.
35-27- 5 Phillips Pet. 6, 7, 12.
19-27- 6 Sinclair O. & G. 11-A, 13, 14, 15, 16.
20-27- 6 Sinclair Oil & Gas, 13, 14, 15, 16.
Rigs, 35; wells drilling, 126; total, 161.

TULSA COUNTY

Rigs
4-17-14 Doyle, H. & S. Oil 2.
1-16-14 Perryman, Turman Oil 1.
6-19-12 Fee, Sand Springs Home 1.
Spring, Sand Springs Home 1.
Bruner, Fitzpatrick et al 1.
23-19-13 Landrum, Hancock et al 1.
1-18-12 Edwards, West et al 11.
7-16-12 Miller, Campbell et al 1.
23-16-12 Flynn, Dickerson 1-A.
24-16-12 Tiger, Oklahoma Natural Gas 8.
34-16-12 Barnett, Southern States 1.
4-19-10 Grayson, Hivick & O'Reilly 1.
10-19-16 Johnson, C. W. Titus et al 1.
15-19-10 Martin, Nelson Oil & Gas 1.
22-20-10 Unallotted, Jones & Burton 1.
Wells Drilling
5-19-14 Childer, John Holt 1.
4-17-14 Perryman, Dan Danciger 1.
30-17-14 Dennest, McCullough et al 1.
7-18-16 Presley, Mays Brothers 5.
12-18-12 Tiger, Flesher Pet. 3-A.
3-16-12 Whetstone, Pearson Oil & Gas 1-A.
24-16-12 Tiger, Oklahoma Natural Gas 7.
27-16-12 Coleman, Independent Oil & Gas 4.
Shut Down
29-19-14 McIntosh, Boyd et al 1.
4-17-14 Tucker, Wade et al 1.
Rentie, Lea Drilling 1.
36-17-14 Secrest, Valley Oil 1.
18-17-15 Wheat, Stone Bluff Syndicate 1.
34-19-12 Vannest, Flesher Pet. 1-A.
17-19-13 Coolidge, Pawhuska Oil & Gas 2.
3-18-12 Fee, Vance 1-A.
13-18-12 Olin, Associated P. & R. 6.
Corbray, Smith et al 4.
6-18-13 Sango, Hancock et al 1.
9-18-12 Bruner, Elliott & Son 1.
33-18-13 Teague, Houston et al 2.
Rigs, 15; wells drilling, 21; total, 36.

OKMULGEE COUNTY

Rigs
2-15-14 Anderson, W. R. Sommerville 7.
5-15-14 Bruner, Murphy & Tilly 1.
4-13-14 Scott, Gramahan et al 3.
17-13-15 Atkin, Purdy & Rebold et al 1.
8-14-14 Harris, Ohiokla Oil 1.
23-14-14 Corbray, Argue & Brockway 6.
32-14-14 Perryman, Dumot et al 2.
Rentie, Settle et al 3.
Hardridge, McMann & Nott 2.
26-15-12 Jones, Galor et al 1.
22-13-12 McIntosh, Clark et al 8.
12-13-13 Gray, Cosden Oil & Gas 10.
34-12-12 Holmes, Eagle Picher Oil 6.
25-12-13 Bird, Kingwood Oil 2.
1-15-11 Cousins, Santonio 2.
3-15-11 Grayson, Hiram Oil 1.
9-15-11 Brandt, Indiahoma Ref. 7.
10-15-11 Cooper, Beggs Oil & Gas 13.
Adams, Cosden Oil & Gas 3.
14-15-11 Grayson, J. J. Shock et al 2.
32-15-11 Gooden, Meisner 2.
Hawkins, John Botts 3.
14-13-11 Thompson, Ohiokla Oil 1.
Thompson, Waite Phillips 1.
26-13-11 Murrell, Allied Refining 1.
29-13-11 Hawkins, Kimbley Oil & Ref. 4.
36-13-11 Turner, Gladys Belle Oil 6.
Wells Drilling
28-13-11 Richardson, Allison Oil 1.
17-14-13 Brown, McCullough et al 1.
30-16-13 Tiger, Enfisco Oil 6.
36-16-13 Ackley, O. L. Collins 1.
34-15-14 Grayson, M. L. Carr 36.
25-13-14 W. E. Reynolds 1.
28-13-15 Fulton, Bynum 1.
30-13-15 Derby, Campbell 1.
32-14-14 Hardridge, Jordan & Ashley 1.
14-15-12 Williams, Texolean Oil 2.
18-15-12 Johnson, Robinson et al 2.
19-15-12 Jefferson, Savoy & Mobery 2.
2-13-12 McGilbra, Acts Oil 2.
9-13-12 Marshall, Crescent Oil 2.
31-13-12 Unallotted, Frank Havel 1.
Unallotted, Waxier & Priesler 2.
26-13-13 Cumseh, Preston Oil 4.
36-14-13 Nero, Stanford et al 3.
5-11-12 Hawkins, Grundish et al 3.
8-11-12 Summers, Moffett et al 2.
15-11-11 Cousins, Waite Phillips 1.
36-11-12 King, Jess Rebold 1.
11-11-13 Bruner, Wooster Oil 2.
24-11-13 Wills, McMahon 1.
6-12-12 Davis, McCray 1.
Mitchell, Gladys Belle & Independent 3.
5-12-13 Hodges, Chief Drilling 3.
18-12-13 Burgess, Smith & Jilson 2.
1-15-11 Grayson, Transcontinental Oil 6.
3-15-11 Grayson, Enfisco Oil 1.
Grayson, Wolford Oil 2.
4-15-11 Richards, Waite Phillips 3.
Shut Down
24-13-14 Thornberry, Iron Mountain Oil 5.
29-13-14 Wiley, Frank Havel 2-A.
16-14-14 Colbert, Hutchinson 1.
35-14-14 Anderson, Wooster Oil 3.
13-15-12 Minugh, Huckins & Wilson 1.
33-15-12 Jackson, Southwestern Pet. 2.
26-15-13 Sampson, Southwest Oil Fields 5.
8-13-12 Martin, Logan & Wallace 4.
24-13-12 Hill, Roxalne Oil 9.
31-13-12 Holleman, Alden 1.
16-14-12 Corbray, Knott & Potter 1.
19-14-13 Perryhill, Kessler 1.
36-11-13 Thompson, Simplex Oil 1.
1-12-12 Monday, Parshall Oil 1.
27-12-12 Wolfe, Vanderwide et al 1.
34-12-12 Wolfe, Eagle Picher Oil 4.
17-15-11 Carolina, Cole et al 1.
22-15-11 Richards, Lebein et al 7.
28-15-11 Johnson, Sheridan Oil 1.
26-13-11 Murrell, E. R. Black 2.
30-13-11 Cross, Cosden Oil & Gas 5.
31-13-11 Holatha, Denver P. & R. 7.
32-13-11 Thomas, Ohiokla Oil 1, 2.
Rigs, 27; wells drilling, 55; total, 82.

OKFUSKEE, HUGHES, SEMINOLE AND McINTOSH COUNTIES

Rigs
20-13-14 McIntosh, Wooster Oil 1.
27-11-15 Ireland, H. & H. Oil 5.
22-11-11 Holmes, Deaner & Jamison 8.
1-12-11 Deer, Hart & O'Laughlin 2.
10-12-11 Robinson, Henry et al 1.
22-12-11 Jacobs, Martin et al 1.
27-12-11 Holmes, Hartman 3.
6-10-10 Unallotted, Lebow 1.
29-10-11 Cubbee, Fisher & Umbree 1.
30-11-10 Grayson, Shaffer O. & R. 1.
27-11- 8 Sands, Burke-Gries 1.
18- 8-10 Irvin, Dixie Oil 2.
3- 9- 9 Davis, Kingwood Oil 1.
4- 9- 9 Alexander, Papoose Oil 1.
8- 9- 9 Brown, Stein et al 1.
9- 9- 9 Simon, Gilcrease Oil 1.
Hill, Papoose Oil 1.
15- 9- 9 Davis, Turman Oil 1.
16- 9- 9 Bruner, Gypsy Oil 1.
17- 9- 9 Smith, Gladys Belle Oil 1.
Brown, Margay Oil 1.
20- 9- 9 Simon, Gilcrease Oil 1.
21-10- 8 Harjo, Tidal-Osage Oil 1.
22-10- 8 Harjo, Holm & Jarvis 1.
28- 8- 8 Foster, Dixie Oil 2, 3.
33- 8- 8 Foster, Dixie Oil 2.
Parker, Magnolia Pet. 3.
Long, Producers & Refiners 1.
29- 8- 8 Walker, Sinclair Oil & Gas 2.
34-11-11 Alexander, Sinclair Oil & Gas 1.
Wells Drilling
28- 9- 8 Davis, Waite Phillips et al 1.
17- 9- 9 Bruner, Oklavania Oil 1.
20- 9- 9 Bruner, Gilcrease Oil 1.
21- 9- 9 Bruner, Prairie Oil & Gas 1.
15-10- 8 Bruner, Gypsy Oil 1.
Bruner, Wilcox Oil et al 1.
Willis, Cosden Oil & Gas 1.
30-10- 9 Barnett, Midwest & Gulf 1.
4- 7- 8 Long, Lewis Oil 1.
5- 7- 8 Foster, Thurbier 1.
6- 7- 8 Dindy, Seaman 1.
28- 8- 8 Foster, Gypsy Oil 1.
32- 8- 8 Foster, Dixie Oil 3, 4.
Long, Dixie Oil 1-B, 4-A, 5-A.
Walker, Dixie Oil 1.
Harris, Dixie Oil 1, 2.
Long, Producers & Refiners 2.
Long, Independent Oil & Gas et al 2.
Lena, Magnolia Pet. 1.
33- 8- 8 Sango, Atlantic, Champlin & Winkler 1.
Foster, Dixie Oil 1, 3-B.
Long, Dixie Oil 1-B, 2-B.
Parker, Magnolia Pet. 2.
Foster, Producers & Refiners 4, 7.
Long, Dixie Oil 1-A.
10- 8- 7 Davis, Ossenbeck et al 1.
25- 8- 7 Rosanna, Dixie Oil 1.
33- 8- 8 Foster, Sinclair Oil & Gas 1, 2, 3.
14- 6- 7 Carolina, Link Oil 1.
20- 6- 7 Daisy Belle, McDougal et al 1.
2-12-16 Vornblood, Montague Oil 1.
30-12-14 Anderson, Alsen Drilling 2.
3-12-15 Bray, Beggs Oil & Gas 1.
29-13-15 McNally, Clifton & Terrell 1.
8- 9-12 Smith, Flesher Pet. 1.
36-10-12 Unallotted, Carter Oil 1.
12-11-11 Fish, Wooster Oil 2.
15-11-11 Tucker, Deaner & Edgar 1.
34-11-11 Barnett, Calvin et al 1.
36-12-10 Brooks, Blakely et al 1.
1-12-11 Thompson, Fair et al 4.
12-12-11 Buckley, Henry Oil 1.
13-12-11 Sugar, North Baltimore 5.
22-12-11 Barnett, Hartman et al 6.
27-12-11 Holmes, Hartman 2.
4- 9-11 Baker, Tidal-Osage Oil 1.
6-10-10 Unallotted, Prairie Oil & Gas 1.
11-10-11 Hill, Transcontinental Oil 1.
3-13- 8 Kinyer, Wilcox & Oswalt 1.
1-11- 8 Fields, Howarth et al 1.
26-12- 8 Beaver, Howarth Oil 1.
25-12- 9 Gallahan, Wangerine 1.
7- 7-10 Barnett, Kingwood Oil 1.
13- 6-11 Middle States Oil 1.
15- 9- 8 Ahaise, Independent Oil & Gas 1
Shut Down
17-11-14 Cumberledge, Wooster Oil 4.
20-12-14 Tucker, Casper et al 1.
4-11-11 Morrow, Anglo-Texas 1.
32-11-11 Holman, Burke-Gries 1.
3-12-11 Grayson, Parshall Oil 2.
28-12-11 Robinson, Anglo-Texas 1.
32- 9-10 King, Vierson et al 2.
9- 9-11 Bruner, Mid-Kansas Oil & Gas 2.
4-13- 8 Saryokiche, Iron Mountain 1.
2-13- 9 Chesnee, Lippa & LaBosquet 1.
30-11- 8 Unallotted, Foster 1.
18-11- 9 Holatha, Link Oil 1.
4- 5-11 Mathews 1.
35- 5-11 Kimbley et al 1.
19- 8- 8 Townsite, Shawnee-Wewoka Oil & Ref. 1.
Townsite, W. R. Ramsey 1.
21- 8- 8 Bowlegs, Magnolia Pet. 1.
28- 8- 8 Foster, Dixie Oil 1.
31- 8- 8 Willis, Stagger 1.
34- 9- 6 Jones, H. H. Taylor 1.
13- 9- 7 Williams, Davis & Malcona Pet. 1.
13- 7- 7 Dean, W. R. Ramsey 1.
19- 5- 7 West, Howarth et al 1.
25- 5- 6 Mingo, T. B. Slick 1.
34- 5- 6 Strenger, Smith et al 1.
33- 6- 6 Charty, Harvey & Maxwell 1.
Rigs, 31; wells drilling, 90; total, 121.

MUSKOGEE-WAGONER COUNTIES

Rigs
5-15-15 Hawkins, Cook & George 3.
3-15-15 Unallotted, O. N. West 2.
20-13-16 Willingham, Egolf Oil 1.
Wells Drilling
5-15-15 Hawkins, Cook & George 2.
24-14-16 Tipton, Roxalne Oil 4.
Shut Down
6-13-16 Callahan, Jack McCutcheon 2.
36-13-17 Arnett, Haller & Douglas 1.
19-14-16 Beam, Vogler & Lightner 7.
35-14-16 Luster, J. A. DeWitte 1.
18-14-17 James, Peterson 5.
27-14-17 Dean, Foltz 1.
32-14-17 Buffington, E. C. Lantz 1.
4-15-15 McDaniels, Wm. Harsha 1, 2.
27-15-15 Charles, Turin Oil 4.
27-14-15 Jefferson, Hazlett et al 1.
29-14-15 Carter, Bonnert et al 2.
32-14-15 Carter, Bandy et al 2.
34-14-15 Durant, Henson et al 1.
Rigs, 3; wells drilling, 16; total, 19.

CREEK COUNTY

Rigs
33-17-11 Pickett, Allen & McGilpin 1-A.
32-18-11 Drew, Cross et al 3.
32-16-10 Bemore, Phillips Pet. 3.
12-16-11 Gilcray, Shaffer Oil & Ref. 1.
15-19- 9 Manley, Shaffer Oil & Ref. 1.
7-17- 8 Island, Flesher Pet. 1.
23-17- 8 Johnson, Savoy Oil 1.
18-17- 9 Winn, Bu-Vi-Bar Pet. 1.
19-17- 9 Wright, Pure Oil 2.
Deer, Prairie Oil & Gas 1.
17-18- 9 West, Jarvis & Holm 1.
29-18- 9 Scales, Peters et al 2.
14-15- 8 Gooden, Damar Oil 1.
23-16- 8 Deer, Lorraine Pet. 11, 12.
28-16- 8 Scott, Roxana Pet. 1.
10-16- 9 Fields, Wolfe Oil 2.
16-16- 9 Barnes, Carter Oil 2.
McNac Roxana Pet. 4.
20-16- 9 Barnett, Dickenson et al 1.
Wells Drilling
21-16- 9 Jacobs, Emery & Sons 4.
Greenwood, H. F. Wilcox Oil & Gas 2.
35-16- 9 Harner, U. S. Cities Oil 2.
24-16- 8 Doyle, Kaufman & Lewis 1.
26-14- 8 Johnson, Tibbons 6.
26-19- 7 Bruner, Lyons Pet. 1.
20-15-10 Goodnow, Midwest & Gulf 2.
16-14-10 Bear, Donnelly et al 2.
11-17-10 Wrightsman, Wilcox & Whitney 1-A.
35-17-10 Bucktrot, H. C. Wilson 2.
18-18-11 Bruner, McLain et al 2-A.
4-16-10 Tiger, Hartman et al 1.
31-19- 9 Gambler, Asa Bailey 1.
4-17- 8 Turman Oil 1.
14-17- 8 Freeman, Transcontinental Oil 2.
22-17- 8 Mitchell, Transcontinental Oil 1.
32-17- 8 Washington, Clean Pet. 3.
19-17- 9 Big Mosquito, C. P. Davis et al 2.
30-17- 9 Galvez Oil 2.
Amerada Pet. 1.
17-18- 9 Scales, Peters et al 1.
19-18- 9 Washington, Bartlett et al 1.
2-15- 8 Alcox, Roland Oil 4.
9-15- 8 Beaver, Chapman 1.
15-15 8 Warnocke, Shaffer Oil & Ref. 2.
Watson, Cosden Oil & Gas 1.
21-15- 8 Wilson, Schermerhorn et al 1.
4-15- 9 Tiger, Phillips Pet. 4.
9-15- 9 Tiger, J. R. Bond 4.
29-15- 9 Colbert, McCree Pet. 1.
14-16- 8 Canada, Phillips Pet. 5.
16-16- 8 Meyers, Skelly Oil 2.
21-16- 8 Major, Tidal-Osage Oil 2.
22-16- 8 Knoll, Laurel Oil & Gas 4.
24-16- 8 Richards, Belmont Oil 2.
25-16- 8 Bucknet, Malcona Pet. 1.
34-16- 8 Harjo, Wilcox Oil & Gas 8.
3-16- 9 Damat, Clark et al 1.
9-16- 9 Carruthers 1.
30-14- 8 Kirnal, Prairie Oil & Gas 3, 4.
Coker, Waite Phillips 1.
30-14- 8 Kirnal, Waite Phillips 1.
Jackson, Roxana Pet. 2.
2-19- 7 Sarty, McCray et al 1.
30-18- 6 Hunter, Home Gas 1.
8-18- 7 Musselman, Magnolia Pet. 3.
36-18- 7 Jones, Magnolia Pet. 3.
30-14- 8 McGilbra, Sinclair Oil & Gas 1.
Shut Down
9-15-10 Grayson, Kawfield Oil 8.
23-15-10 McIntosh, Argue & Compton 5.
29-15-10 McIntosh, Carter Oil & Davis 1.
34-15-10 Sewell, Cosden Oil & Gas 1.
3-14-10 Meyers, Tom Kelly 1.
31-14-10 Barnett, Independent Oil & Gas 1.
7-19- 8 Griffith, Malcona Pet. 1.
14-19- 8 Lewis, Kiskadden & Crane 1.
26-19- 8 Foster, Kiskadden et al 1.
16-19- 9 Postoak, Shaffer Oil & Ref. 4.
Postoak, Howarth Oil & Gas 3.
30-19- 9 Jefferson, Sapulpa Ref. 2, 3.
23-17- 8 Walker, Duquesne Oil 3.
27-17- 8 Venci, Waite Phillips 2.
33-17- 8 Alex, Sartian Bros. 2.
6-17- 9 Not Mapped, Malcona Pet. 1.
31-17- 9 Marshall, Prairie Oil & Gas 2.
32-17- 9 Tiger, Neilson et al 1.
15-15- 8 Warnocke, Cosden Oil & Gas 1.
23-15- 8 Peters, Bu-Vi-Bar Pet. 1.
30-15- 8 Phillips 1.
35-15- 8 Hill, C. G. Tibbons 1.
29-16- 8 Fixico, Atlantic Oil Prod. 1.
16-16- 9 Fee, Slick 9.
17-16- 9 Jackson & Wise 1.
21-16- 9 Hendrickson, Nowata Oil & Ref. 1.
29-16- 9 Hamilton, Kirven et al 2, 4.
34-16- 9 Barnett, E. C. Clay et al 2.
36-16- 9 Charles, Jomack Oil 2.
9-14- 8 Alabaugh, Cohan et al 1.
14-14- 8 Bearhead, Prairie Oil & Gas 1.
27-14- 8 McIntosh, Billingsles et al 5.
Rigs, 20; wells drilling, 83; total, 103.

PAWNEE COUNTY

Rigs
24-20- 8 First National Bank, Southwest O. F. 6.
8-21- 6 Simmons, Wood & Farren 1.
21-20- 6 Emery, Josey Oil 3.
9-22-3e Arkekota, Magnolia Pet. 2.
Wells Drilling
25-20- 9 Lot 66, Mutual Oil 5.
8-21- 6 Calclaser, Duquesne Oil 1.
Calclaser, Amerada Pet. 1.
18-21- 6 Dart, Haley-Garber-Pulse 1.
4-19- 5 Gypsy Oil 1.
16-20- 6 School Land, Magnolia Pet. 1, 4.
17-20- 6 Goring, Watchorn Oil & Gas 1.
21-20- 6 Lesher, Magnolia Pet. 4.
Lesher, Dempsey et al 1.
36-23-4e Willard, Cosden Oil & Gas 1.
15-22-5e Prairie Oil & Gas 1.
5-23-5e Phillips, Mosier et al 2.
7-23-5e Donahue et al 1.
6-22-2e Miller, Miller-Wrightsman 1.
32-23-3e Robedeaux, Magnolia Pet. 1.
33-23-3e Brown, Watchorn Oil & Gas 1.
Miller, Watchorn Oil & Gas 5, 6.
Shut Down
24-20- 8 First National Bank, Southwest O. F. 5.
Hamilton, Tidal-Osage Oil 10.
32-20- 8 Parker, Burton & Breslyn 1.
27-20- 9 Unallotted, Holmes et al 1.
25-22- 6 Bell, Victor Oil 1.
35-22- 6 Burke-Gries 1.
28-20- 7 Alleman, Fugate & Clifford 3.
17-21- 6 Phillips, Cosden Oil & Gas 1.
8-21- 7 Kinsley, Freeman 1.
20-21- 7 Priestley & Waxler 1.
12-21- 7 Hussey, Flight et al 1.
25-21- 7 Harrington, McNemire & West 1.
27-21- 7 Daniels et al 1.
17-20- 6 Adkinson, Davis et al 1.
Trevesdale, Carter Oil 2.
Rigs, 4; wells drilling, 34; total, 38.

PAYNE COUNTY

Rigs
34-19-4 Saunders, Twin State Oil 1.
Wells Drilling
33-19-4 Ballard, Magnolia Pet. 5.
34-19-4 Main, Magnolia Pet. 9.
12-17-4 Willis Oil & Gas 1.
28-18-5 Walker, Magnolia Pet. 2.
28-17-3 Plateau Oil 1.
9-18-3 Dan Bunnell, Jr. 1.
Shut Down
30-18 5 Cochran, Cassday et al 6.
Cochran, Amerada Pet. 2.
21-19-1w Ponca Oil & Gas 1.
Rigs, 1; wells drilling, 9; total, 10.

KAY COUNTY

Rigs
4-27- 5 Roxana Pet. 3, 4, 5.
George Boie 3.
10-27- 5 Gypsy Oil 2.
Carter Oil 4.
15-27- 5 Mid-Kansas Oil & Gas 13, 14.
35-25-1w Ogg, Comar Oil 8, 11.
Wells Drilling
36-29-1e Taylor, Gladys Belle Oil 1.
32-29-5e Bellmard, McCray et al 1.
33-29-5e Bellmard, Galvez Oil 1.
3-27- 5 Texas Co. 2.
Carter Oil 1.
4-27- 5 Roxana Pet. 2.
George Boie 2.
Gypsy Oil 5.
9-27- 5 Phillips Pet. 3, 7, 8, 9, 10.
Prairie Oil & Gas 1, 2.
Mid-Kansas Oil & Gas 3, 4.
15-27- 5 Dye & Tomlison 7.
Twin State Oil 7, 8.
Comar Oil 3, 5, 6.
8-28-2e Carder, Mid-Kansas Oil & Gas 1.
23-29-3e Brown, Johnson & Scott 1.
21-29-1e Clink, Spencer et al 1.
7-26-1e Goodson, Southwestern Pet. 1.
14-26-1w McClaskey, Ostot Dev. 1.
34-26-1w Miles, Alcorn Oil 1.
3-27-1w Rohr, Ostot Dev. 2.
8-27-1w Jakley, Globe Ref. 1.
9-27-1w Cumiev, Blackwell Oil & Gas 1.
10-27-1w Humphreys, Blackwell O. & G. 1.
Jones Prairie Oil & Gas 2.
Carmichael, Hess & Kinard 1.
15-27-1w Show, Ostot & Poling 1.
Johnson, Ostot & Poling 2.
16-27-1w Langery, National Union Oil 1.
Slocum, Manahan et al 2.
Slocum, Analou Oil 2.
32-27-1w Elledge, Amerada Pet. 1.
13-27-1e Kiefer, Producers & Refiners 1.
27-25-1w Knostman, Texas Co. 1.
34-25-1w McKee, McCaskey & Wentz 63, 65.
Beverlin, Comar Oil 9-A, 17, 20-A.
28-28-2w Armstrong, Springer Drg. 1.
7-28-3w Cook, Marland Ref. 1.
23-29-3w Hoffman, Ossenback et al 1.
13-26-2w Hubbard, Alcorn Oil 1.
9-27- 5 Woods, Sinclair Oil & Gas 2.
15-27- 5 Sinclair Oil & Gas 5.
Shut Down
10-27- 5 Comar Oil 4.
Phillips-Delmar 1, 4, 5.
15-27- 5 Sinclair O. & G. 3, 6, 7, 8, 9, 10, 11, 12.
15-27- 5 Dye & Tomlison 6, 8.
Twin State Oil 6, 9, 10.

Comar Oil 4, 7.
Mid-Kansas O. & G. 5, 7, 9, 10, 15, 16.
16-27- 5 Riggs, Skelly-Phillips 2, 3.
Phillips Pet. 1.
McCassey, Pure Oil 3, 4.
29-27- 5 Skelly-Phillips 6, 10.
Gypsy Oil 2, 3, 5, 6, 7, 8, 10, 11.
Carter Oil 5, 6, 7, 9, 10, 13, 14, 15, 16.
14-26-2e Bell, Waite Phillips 1.
11-28-1e Lowery, Oklahoma Natural **Gas 1.**
15-28-1e Trenary, Grand Island Oil **& Gas 1.**
10-27-1w Crouch, Blackwell Oil **& Gas 1.**
27-25-1w Sulter, McMann Oil 4.
16-25-1w Frazier, Bailey & Thompson 1.
13-25-1w Russell, Marland & Cosden 3-A.
Wood, Marland & Cosden 4.
24-25-1w McKee, McCaskey & Wentz 22.
25-25-1w Endicott, Comar Oil 4.
Ogg, Comar Oil 3.
22-29-2w Elwell, Guyler & Daniels 1.
8-26-2w Smith, Day Oil 1.
Rigs, 10; wells drilling, 115; total, 125.

GARFIELD-NOBLE COUNTIES

Rigs

2-24-1w Clark, Gypsy Oil 68.
Gaume, Comar Oil 11-B.
3-23-1w Cooper, Faller et al 1.
25-23-1w Burnside, Jankowsky et al 1.
4-25-2w Bollinger, Smith Claire Drg. 1.
7-21-3w Kettner, Chaffee et al 1.
11-21-4w Beepple, Boepple et al 2.
17-23-8w Diveley, Bullock et al 1.

Wells Drilling

14-24-2e Kemple, Ossenbeck et al 1.
12-25-2e Four Eyes, Marland Ref. 2.
20-25-2e Miller Brothers, Marland Ref. 2.
31-25-2e 101 Ranch, Marland Ref. 1.
2-24-1w Clark, Gypsy Oil 59, 60, 74.
Gaume, Comar Oil 13, 14.
Blubaugh, Comar Oil 10, 15, 22, 23, C-9.
2-24-1w Ruzek, Comar Oil 7-A.
Carmichael, Comar Oil 13-A.
11-24-1w Rence, Healdton Oil & Gas 5-B, 11-A, 12, 14, 14-A.
29-24-1w Robinson, Tuloma Oil 15.
8-25-2w Chambers, Besdor Oil 1.
27-25-2w Simmons, W. E. Brown 1.
17-22-2w Murphy, Prairie Oil & Gas 1.
12-22-4w Stine, Hopper et al 2.
23-21-4w Miller, Rosenthal et al 1.

Shut Down

20-24-2e Leclair, Ossenbeck et al 1.
2-20-2e Conley, Colorado Oil & Gas 1.
12-21-3e Sayre, Ossenbeck et al 1.
31-21-3e Christie, Colorado Oil & Gas 1.
2-24-1w Clark, Gypsy Oil 61, 62, 70, 71, 72, 73.
Gaume, Comar Oil 8-B, 9-A, 9-B, 10-B, 11-A, 12-A, 13-A, 14-A, 15, 16.
Blubaugh, Comar Oil 8-B, 11-B, 15-A, 17, 17-A, 21, 22-A, 23-A, C-1B, C-3A, C-4, C-4A, C-5A, C-7, C-7A, C-8, C-8A.
2-24-1w Ruzek, Comar Oil 7-B.
Carmichael, Comar Oil 3-B, 13-B, 18-B, 22.
10-24-1w Novotny, Prairie Oil & Gas 5, 7.
15-24-1w See, Comar Oil 7-A, 15.
16-24-1w School Land, Marland & Cosden 1, 7, 8.
20-24-1w Rood, Eureka Oil 1.
21-24-1w Burk, Champlin Refining 1.
21-22-1w Forman, Walters Oil & Gas 1.
32-20-1e Boyle, Nelson & Hayden 1.
14-20-1w Ruhr, Walters Oil & Gas 1.
20-21-1w Boyce, Perry Service 1.
31-21-1w McNeely, Snowden & McSweeney 1.
36-25-2e Davis, Emery & Leeright 1.
1-22-2w White, Frank Kelly et al 1.
15-22-2w Baldwin, Chapmiln et al 1.
25-22-4w Hotson, Empire Gas & Fuel 19.
30-22-4w Cruce, Hollingworth et al 1.
3-22-5w Wengert, Martin-Fleming 1.
13-20-4w Tammell, Summers Oil & Gas 1.
25-20-4w McCullough, Danciger Oil 1.
19-20-5w Ray, Summers Oil & Gas 1.
31-21-5w Champ, Summers Oil & Gas 1.
7-20-6w Senrand, Jens, Marie Oil 1.
2-21-7w Montgomery, Margay Oil 1.
6-22-6w Heas, Welz-Wood Oil 1.
Rigs, 8; wells drilling, 96; total, 104.

CARTER COUNTY

Rigs

34-1s-1w Miller, Simpson-Fell 1.
10-2s-2w Dings, Skelly Oil 3.
34-2s-2w Abernathy, Schermerhorn 1.
35-2s-2w Adams, Neustadt 1.
Jefferson, Wirt Franklin 3, 5.
5-3s-2w Cruse, Schermerhorn 1.
Cobbs, Atlantic Oil Prod. 2.
Fee, Wirt Franklin 1.
6-3s-2w Palmer, Patsy Oil 9.

Wells Drilling

16-4s-1e Bishop, Ed Felmlee 1.
30-5s-1e Baptiste, Amerada Pet. 19.
34-5s-1e Butler, Amerada Pet. 1.
18-1s-3w Hardin, Magnolia Pet. 1.
36-1s-3w Ratliff, Humble Oil & Ref. 1.
34-1s-3w Howard, Humble Oil & Ref. 1.
30-2s-2w Sparks, Cameron Ref. 5.
Sparks, Schermerhorn 3, 5, 7.
Rickett, Schermerhorn 2.
Dings, Skelly Oil 2.
31-2s-2w Ellis, Cotton Belt Pet. 2, 3, 5.
Holmes, Kirk Oil & Gas 10.
Fowler, Merrick et al 1.
Dings, Merrick et al 4.
Burrow, Healdton Oil & Gas 4.
Meyers, Healdton Oil & Gas 2.
Palmer, Patsy Oil 8.
Bennett, Magnolia Pet. 4, 6, 10.
Bennett, Merrick et al 3, 10.
Sheppard, Abe Kaufman 1.
32-2s-2w Meyers, Healdton Oil & Gas 1.
Palmer, Schermerhorn 3, 4.
Royer, Magnolia Pet. 1.
29-1s-3w Jenkins, Humble Oil & Ref. 1.
2-2s-3w Lyles, Barber et al 1.
13-2s-3w Pierce, Pringle et al 1.
14-2s-3w Lyles, Humble Oil & Ref. 1.
23-2s-3w Layman, Magnolia Pet. 2.
24-2s-3w Williams, Magnolia Pet. 2, 3, 4.
Holden, Wirt Franklin 1, 3.
Adams, Cameron Ref. 1, 2.
Abernathy, Schermerhorn 3.
25-2s-3w Simpson, Skelly Oil 1.
Jefferson, Galt-Fitzgerald 1.
35-2s-3w Wolfe, Great Southwestern 5.
Tucker, Magnolia Pet. 1, 3, 4, 5.
Stanton, Atlantic Oil Producing 1.
Jefferson, Twin State Oil 2, 3, 4.
Phillips, Atlantic Oil Producing 1.
Jefferson, Atlantic Oil Prod. 1.
Jefferson, Wirt Franklin 4.
Jefferson, Amster Oil 3.
Hinkle, Amster Oil 2.
26-2s-3w Swartz, Magnolia Pet. 2.
27-2s-3w McClure, Paige Oil 4.
35-2s-3w Brooks, Rockland Oil 6, 9, 10.
5-3s-2w Cobbs, Atlantic Oil Prod. 1.
Poland, Southerland Oil 2.
Palmer, Schermerhorn 2.
Cobbs, Merrick et al 2.
6-3s-2w Fee, Smith et al 1.
Palmer, Patsy Oil 1.
9-4s-2w Lowery, Sure Oil 2.
Walker, Sure Oil 11.
10-4s-2w Rexroat, Cotton Belt Pet. 4-C.
Dillard, Carter Oil 2.
15-4s-2w Woodruff, Magnolia Pet. 26-A.
16-4s-2w Ward, Carter Oil 19.
21-4s-2w Noble, Carter Oil 39, 40, 41.
Ward, Carter Oil 20.
Horton, Magnolia Pet. 10.
Noble, Fitzgerald 7.
22-4s-2w Carr, Magnolia Pet. 10, 11, 12, 13.

Shut Down

20-5s-1e Baptiste, Amerada Pet. 18, 2.
Farre, Amerada Pet. 10.
30-2s-2w Sparks, Humble Oil & Ref. 1.
Carr, Magnolia Pet. 1.
Sparks, Cotton Belt Pet. 3, 5.
22-2s-3w Carpenter, Humble Oil & Ref. 2.
25-2s-3w Jefferson, Twin State Oil 1.
Hinkle, Amster Oil 3.
Laymen, Magnolia Pet. 5, 6.
27-2s-3w Fee, C. R. Smith 5.
McClure, Paige Oil 4.
8-3s-2w Harrison, Noble Oil & Gas 1.
7-3s-2w Heskett, Woodruff 1.
9-4s-2w Walker, Sure Oil 14.
15-4s-2w Woodruff, Carter Oil 9, 33.
Martin, Sure Oil 7.
16-4s-2w Westheimer, Amster Oil 9.
Ward, Southerland Oil 7.
Gazaway, Humble Oil & Ref. 9.
21-4s-2w Noble, Carter Oil 42.
Noble, Skelly Oil 10.
22-4s-2w Dillard, Skelly Oil 15-A.
Dillard, Humble O. & R. 8, 9.
11-4s-3w Davis, Holliday 1.
13-5s-3w Beal, Wickenhiser & Rose 1.
27-3s-2e Brown, Home Oil 1.
Rigs, 10; wells drilling, 118; total, 128.

STEPHENS-COTTON COUNTIES

Rigs

33-2n-9w Vanhouser, Samuels et al 1.
33-1s-8w Ramsey, Magnolia Pet. 16.

Wells Drilling

3-1n-4w Graham, T. & P. C. & O. 1.
28-3s-4w Sullivan, Cameron-Galt 1.
25-1n-6w Barnes, Magnolia Pet. 1.
2-2s-6w Saunders, Magnolia Pet. 1.
17-2s-ew McBee, J. C. Cook Oil & Gas 1.
4-3s-6w Peck, Magnolia Pet. 1.
22-3s-6w Fillmore, Gant et al 1.
30-1n-8w Maxey, Gypsy Oil 2-B.
14-1n-9w Atkins, Walton et al 2.
23-1n-9w-Fleming, Preddy et al 1.
Bolton, McMann 3.
5-1s-8w Gell, Walker Valley Oil 1.
18-1s-8w Johnson, Ash Brothers 4.
20-1s-8w Bartley, Magnolia Pet. 8.
29-2s-10w Butler, Mallernee et al 1.

Shut Down

11-1n-5w Sampson, Kilgore Oil 4.
19-1n-5w Payne, Gant et al 1.
14-1n-9w Atkins, Glenhoma Oil 1.
13-2s-8w Mark, Gant et al 2.
36-4s-11w West, McBarn Oil 1.
39-4s-10w Barber, Amerada Pet. 1.
Rigs, 2; wells drilling, 21; total, 23.

MISCELLANEOUS

Rigs

Alfalfa County—
15-24-9w Quinn, Haley, Garber & Pulse 1.
Beckham County—
20-9-23w Harrison, Kinard et al 1.
32-9-23w Unknown, Foster & Santrock 1.
Coal County—
1-11-11 Nichols, G. E. Vaughn 1.
18-2n- 9 Hicks, Bassie Oil 1.
Comanche County—
33-2-9w School Land, A. G. Samuels 1.
Garvin County—
13-1n-5w Newberry, Pauls Valley Oil 1.
Grady County—
6-10-8w Ballard, Bowles & White 1.
Lincoln County—
6-15-6 Earp, Independent O. & G. 1.
2-14-5 Ely, Flynn & Morgan 1.
12-14-6 Strip, J. A. Hull 1.
7-13-3 Ewing, Douglas Oil 1.
Logan County—
28-15-1w Ganough, Lambert et al 1.
32-18-3w Guier, Pioneer Pet. 1.
Pontotoc County—
19-5-7 Donner, Howarth O. & G. 1.
28-4-7 Potter, Hughes et al 1.
Roger Mills County—
10-16-21w Seaba, Kellogg et al 1.
3-13-21w Fields, Texas Oil Dev. 1.
Texas County—
4-1-12 Allison, Home Dev. Co. 2.
Washita County—
9-8-15w Prettearcas, McCoy et al 1.

Wells Drilling and Shut Down
(Shut Down Wells Indicated by *)

Alfalfa County—
21-27-19w Watts, McGinnis & Ward et al 1.
23-24-11w Turnbull, Armstrong et al 1*.
Beaver County—
33-5-25e Dewey, Gate Valley Oil 1*.
6-1-26e James, Empire 1*.
Beckham County—
24-10-24w Green, Boilleau et al 1.
15-10-22w Wilkerson, Phillips et al 1*.
35- 9-24w Little, Grimes Bros. 1.
15- 9-23w Goldsmith, Hivick & Stone 1*.
Goldsmith, Clark & Tipton 1*.
Goldsmith, Sayre O. & G. 1.
Buckowski, Emerald Oil 1.
Montgomery, Magnolia Pet. 1*.
18- 9-22w Seidel, Christmas et al 1.
35- 9-23w Jordan, Beckham Oil Co. 1*.
14- 9-26w Githens, Grimes Bros. 1*.
32- 9-22w Dalton, Simpson 1.
4- 8-24w Unknown, Small et al 1.
35-10-23w Unknown, Simpson et al 1*.
35- 9-25w Gibson, Grimes etl 1*.
16- 9-23w Walker, Moffett & Sandhill 1.
21- 9-23w Roberts, Ike Williams 1*.
21- 9-23w Ensey, Coogan & Wallace 1.
31- 9-23w Windle, Gypsy Oil 1.
32- 9-23w Jackson, Simpson 1.
26- 9-23w Sheets, Sayre O. & D. 1.
32- 9-23w Knight, Simpson et al 1.
33- 9-23w Martin, Foster Oil 1*.
8- 8-26w Unknown, Buffalo Oil 1.
4- 8- 22w Ross, Turman Oil 1*.
36- 9-24w Ezell, Magnolia Pet. 1.
10- 8-21w Kelly, Bunell 1.
6- 9-24w Burkhalter, Pringle et al 1*.
23- 9-23w Patterson, Heydrick 1.
14- 9-23w Ingram, Texas Co. 1.
Blaine County—
7-18-10w Cronister, Byers et al 1*.
21-15-10w Erlemeier, Okoma Oil 1*.
Caddo County—
3-5-9w Perry, Magnolia Pet. 2.
13-8-10w Bowling, Cook O. & G. 1.
26-6-10w Garner, Scheetz & Schinn 1.
12-5- 9w Wagner, Flora Okla 1*.
Canadian County—
34-13-9w Dawson, Ponca O. & G. 1.
Cherokee County—
23-18-19 McKay, Great Western Dev. 1*.
23-19-21 Unknown, Adkinson et al 1*.
35-19-22 Unknown, Gayhoma Oil 1*.
20-17-22 Benge, Beeler et al 1*.
6-16-22 Unknown, Corridan et al 1*.
33-19-23 Unknown, Gayhoma O. & G. 1*
Cimarron County—
22-5-9e Martin, Campbell Riley et al 1*.
Cleveland County—
21-10-4w Rowland, Garr Oil 1*.
Coal County—
24-1n-8e Jellerson, McPherson et al 1*.
7-2n- 8 Spears, Mecca Oil 1*.
34-2n- 9 Park, Bearman et al 1*.
16- 2-10 Downard, Vaughn et al 1.
Comanche County—
14-1n- 9w Adkins, Waldman & Shrann 1*.
Adkins, Glenhoma Pet. 1*.
23- 2-10w Cox, Cherry et al 1*.
Custer County—
1-15-15w Rough, Parker O. & G. 1*.
26-15-18w Hatcher, Price & Pringley 1*.
1-14-14w Boone, Guiller & Ossenbeck 1*.
23-13-14w Fry, Pauline Oil 1*.
Dewey County—
22-16-18w Elders, Morton et al 1.
Garvin County—
20- 4-4w McKinnon, Ethel Oil 1.
3-1n-4w Wade, Tex. & Pac. C. & O. 1.
2- 4-3w Bell, Donaldson 1.
8- 1-3w Cosden, T. P. C. & O. 1.
16- 1-3w Mauldin, Magnolia Pet. 3.
3- 1-2w Pipejoy, Kennedy et al 1*.
16- 1- 2 Hohanna, Cornhuskers Oil 1*.
25- 4-1e Hines, Owl O. & G. 1*.
30- 4-2w Mays, Gypsy Oil 1.
5-3n-3e Grey, Manahan 1*.
18-1n-3w Derdyn, Magnolia Pet. 1*.
36-3n-3w Sutton, Rinehart et al 1.
10-3n-3e Huttall, Heath & Bowman 1*.
27-2n-1e Forman, Garland 1*.
29-2n-2e Murray, Black Pet. 1*.
10-1n-3w Gibson, Magnolia Pet. 6.
11-3n-3w Harkreder, Ship et al 2*.
31-1n-2w Prince, Harver Bros. 1*.
18-1n-1e Richardson, Bidner et al 1.
Grady County—
11- 4-8w Williams, Magnolia Pet. 1.
14- 4-8w Pendley, Humble O. &. R. 1.
22- 4-8w Cox, Elier et al 1.
19- 6-5w Carson, Langston et al 1*.
11- 6-8w Holloway, Nichols Drg. 1.
23- 5-8w McCoughtry, Stogner & Ball 1*.
Sanford, American Drg. 1*.
22- 5-7w McFarland, Badget, Jones & Hughes 1*.
2- 4-8w Wood, Nichols Drg. 1*.
17- 5-7w Neli, Arrasmith et al 1*.
17- 5-7w McClelland, Arrasmith et al 1.
10- 5-8w Williams, United American 1*.
35- 5-8w Duke, Magnolia Pet. 1.
14- 4-8w Pendley, Magnolia Pet. 2.
36- 4-8w Brown, Phillips & Caudill 1.
Grant County—
27-27-3w Lane, Western States 1.
3-26-6w McKennan, Wrightsman 1.
20-26-4w Edwards, Emery & Leright 1.
22-27-3w Stewart, Western States 4.
26-27-3w Snouffler, Associated P. & R. 3*.
22-26-4w Volmer, Myers O. & G. 1*.
19-25-5w Reynolds, Hutchinson et al 1.
23-29-3w Hoffman, Ossie Oil 1*.
7-28-3w Nelson, Marland Ref. 1.
14-27-3w Howell, Western States 1.
8-27-3w Moon, Midwest & Gulf 1*.
8-26-5w Bonham, Jarvis et al 1.
11-26- 4 Bonham, Broadhurst & Foster 1.
11-25-7w Kuykendall, Walters O. & G. 1.
14-25-5w Midgley, Myers O. & G. 1.
Greer County—
23-7-23w D'Armond, Western Nat. Gas 1*.
Harmon County—
21-2-26w Unknown, J. C. Keys 1*.
Jackson County—
20-3n-30w Baker, Douglas Oil 1.
36-2n-23w Unknown, Ship et al 1*.
Kingfisher County—
30-16-9w Burton, Pansy Oil 1*.
25-17-5w Smith, Bryssey & Hines 1*.
Kiowa County—
33-6-20w State, Kiowa Pet. 1*.
34-7-16w Indian Land, Conner et al 2.
Lincoln County—
1-14- 6 Zollers, Roxana Pet. 1.
11-14- 6 Jackson, Roxana & Wolverine 1.
12-14- 6 Unknown, J. A. Hull 1.
28-17- 3 Unknown, Plateau Oil 1*.
28-17- 5 Willison, Pure & Magnolia 1.
2-13- 6 Unallotted, H. F. Wilcox 1.
21 -16- 3 Hazlett, Pryor & Dellaire 1.
10-16- 5 Wyman, Mascho et al 1*.
16-16- 4 School Land, Sartain Bros. 1.
2-16- 4 Unknown, J. A. Dingwall 1.
17-15- 3 Powell, Mutual Oil 1*.
15-15- 6 Lovett, Blankenship et al 1*.
21-14- 6 Scheiff, Stroud O. & G. 1*.
7-14- 4 Norton, Heinz & Green 1*.
14-13- 6 Heinzig, Prod. & Ref. 1.
18-13- 5 Gallagher, Sun Ray Oil 1*.
18-14- 5 Willison, Pure & Magnolia 1.
2-14- 6 Jackson, Union Pet. 1.
Logan County—
36-15-2w Baker, Oklahoma Drg. 1*.
32-19-3w Newman, Burford & Brim 1.
9-18-2w Wyatt, Mulhall Oil 1.
28-18-4w Moor, Franklin Oil 1.
McClain County—
31- 5-4w Gooch, Hall & Briscoe 1*.
Oklahoma County—
29-13- 1 Lovett, Charles Shaw 1*.
8-13-1w Hendricks, W. R. Ramsey 1.
36-11-3w Unknown, McBith 1.
Pittsburg County—
29- 6-13 Townsend, Richards 1*.
22- 3-13 Fee, Ward Smith 1*.
28- 8-15 Cheadle, Eugene Oil 1*.
Pontotoc County—
28- 3- 4 Lollis, Clark et al 1*.
32- 5-2e Brown, Carter et al 2*.
5- 4-5e Starrett, Craig et al 1*.
34- 4-6e Perry, Lancaster & Smith 1.
34- 5-6e Stringer, Bowles & Smith 1*.
31- 5-5e Lewis, LaSalle et al 1*.
Pottawatomie County—
19- 7- 4 Neglinguet, Pierce & McMan 1*.
9- 5- 2 Ball, Day Oil 1.
13-11- 3 Unknown, Blaumer et al 1.
10- 6- 2 McGee, Davy et al 1*.
18-7- 5 Vinson, Magnolia Pet. 1.
13-10- 2 Howell, Ossie Oil 1.
25-10- 4 Brooks, Noco Pet. 1*.
Pushmataha County—
33-2n-19e Irachwood, Anchor Oil 1*.
31-3s-15e McGee, George et al 1*.
Roger Mills County—
1-16-21w Unknown, Mutual Oil 1.
9-16-21w Unknown, Roxana Pet. 1.
28-14-23w Lindall, Porter Lease Synd. 1*
3-13-26w Baker, Concord Oil 1*.
Sequoyah County—
20-13-21 Sootawakeky, Empire G. & F. 1*.
1-11-21 Wilson, Mathes Pet. 1*.
31-12-23 Sanders, J. C. King et al 1*.
Texas County—
6-1n-17e Wood Ranch, Beaver Oil 1*.
Washita County—
23-9-17w Unknown, Hartman et al 1*.
29-8-16w Wilkinson, Enid Garber Oil 1*.
Woodward County—
34-20-20w Unknown, Beard et al 1*.
Woods County—
19-24-14w Whitney, McCray et al 1.

SOUTHERN OKLAHOMA

Rigs

Atoka County—
17-4s-11e Dabney, Hanson et al 1.
Bryan County—
11-6s-9e Combs, Lyons Pet. 1.
Johnston County—
29-4s-5e Smith, Mitchell et al 1.
Marshall County—
34-5s-7e Starks, Patterson & Hoffman 1.
18-5s-5e Sacra, Layne-Watson 1.
McCurtain County—
35-8s-23e Brown, Noco Pet. 1.
Murray County—
13-1s-3w Lawrence, Stauffer et al 1.
Tillman County—
28-3-14w Lawrence, Burton 2.

Wells Drilling and Shut Down
(Shut Down Wells Indicated by *)

Atoka County—
7-2s-9e Wyand, McPherson et al 1*.
28-2s-9e Underwood, Wapanucka Dev. 1*.
1-2s-9e Kemp, Florence Oil 2*.
Bryan County—
32-7s-8e Ramsey, Barlieu 1*.
Choctaw County—
2-6s-15e Gockel, Smith et al 1*.
6-5s-15e Hanniville, Fidelity O. & G. 1*.
Jefferson County—
16-6s-7w Jackson, Humble O. & R. 1.
36-5s-8w Unknown, J. C. Cook 1.
5-5s-7w Cox, Hutton Bros. 1.
31-4s-8w Anderson, Shawver & Sutter 1*.
28-3s-4w Sullivan, Galt et al 1.
10-7s-6w Wray, Lugg et al 1.
13-7s-6w Reed, Landis et al 1*.
33-7s-6w Stanfield, Elzie et al 1*.
22-3s-6w Edwards, Gant et al 1.
33-6s-5w Sealey, J. F. Drake et al 1*.
Johnston County—
7-5s-8e Wilson, Tucker et al 1*.
9-4s-4e Trotter, Root et al 1*.
Love County—
9-7s-1w Gray, Davenport et al 1*.
11-7s-2e Wilson, Drillers Synd. 1*.
29-6s-3e Starrett, Northwestern Oil 1*.
27-6s-2e Draughn, Union Dev. 2*.
Marshall County—
26-7s-5e Everrett, Magnolia Pet. 1.
14-7s-7e Love, H. C. Haley 1*.
27-5s-4e Chafney, Deck et al 1*.
30-5s-7e Cardinal, Metz Oil 1.
18-6s-7e Burney, Alexander & Ellis 1*.
1-6s-6e Sutleffe, Moore 1*.
14-6s-6e Simmons, Winters et al 1*.
36-5s-6e Holden, United S Oil 1*.
McCurtain County—
14-9s-25e Harris, Bellworth O. & G. 1*.
15-8s-26e Wilson, Red River Pet. 1*.
Murray County—
11-1s-1e Rowe, Beard & Miller 1*.
Tillman County—
6-5s-15w Hanneville, Fidelity Oil 1*.
23-2s-17w Foster, Luffborough 1*.
7-2s-18w Duncan, Battes et al 2*.
10-4s-18w Couch, Spears et al 1*.
Rigs, 28; wells drilling, 212; total, 240.

KANSAS FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Butler	1	0	1	0
Montgomery-Wilson-Neosho-Allen	0	0	0	0
Miami-Franklin-Anderson	0	0	0	0
Greenwood-Woodson	13	340	7	0
Marion	0	0	0	0
Chautauqua-Elk	5	0	2	3
Miscellaneous	13	405	6	3
Total December	32	745	16	6
Total November	29	613	16	3
Difference	3	132	0	4

Summary of New Operations

County—	Rigs	Drg.	Ttl.
Butler	2	15	17
Montgomery-Wilson-Neosho-Allen	0	1	1
Miami-Franklin-Anderson	0	0	0
Greenwood-Woodson	25	41	66
Marion	8	4	12
Chautauqua-Elk	1	4	5
Miscellaneous	10	69	79
Total December	46	134	180
Total November	54	149	204
Difference	8	6	14

GREENWOOD AND WOODSON COUNTIES

31-22-10 Barnard, Rogers & Brown 2.. dry
23-24-10 Edwards, Miller et al 1..... dry

1-25- 8 Jackson, Harwood & Winters 1 . . . . . dry
13-24-11 F. Ott, Hutton & Reagan 1 . . . dry
14-23-13 E. Elliott, Mendenhall & Winkler 5 20
32-23-15 Welde, Rogers & Hinkle 1 50
Welde, Rogers & Hinkle 2 . . . 1b
3-23-13 Sander, Theta Oil 7 . . . . . dry
21-23-13 Jones, Gillespie 6 30
19-22-11 Harris, Empire Gas & Fuel 1 abd
19-25- 9 Ladd, Mid-Kansas Oil & Gas 2 20b
32-26- 9 Duke, Marshall et al 1 25
18-25- 9 Teter, Ward-McGinnis 2 . . . . . dry

Wells completed 13
Production 340
Dry and abandoned 7
Gas 0
Gas production 0

CHAUTAUQUA-ELK COUNTIES

17-29-12 Spear, Webster Oil 1 . . . . . gas
26-29- 9 Jackson, Clark Oil 1 . . . . . dry
27-29- 9 Harris, Phillips et al 1 . . . . . gas
33-29- 9 Parkins, Mitchell Oil 1 . . . . . gas
31-29- 9 Denton, Mitchell et al 1 . . . . . dry
Wells completed 5

Production 0
Dry 2
Gas 3
Gas production 7,000,000

BUTLER COUNTY

36-24-4 Watson, McGinnis et al 1 . . . . . dry

Wells completed 1
Production 0
Dry 1
Gas 0
Gas production 0

MISCELLANEOUS

Cowley County—
6-32-5 Brown, Trees Bros. 1 25
19-34-8 Wilson, Waite Phillips 1 . . . . . dry
26-32-4 Gooden, J. A. Hull 2 . . . . . gas
36-32-4 Keithley, Emerald Oil 3 60
4-30-8 Forter, Roth & Co. 1 . . . . . dry
13-30-8 Burge, Craft et al 1 . . . . . gas
5-30-9 McIntire, Blaxter & Mitchell 2. gas
36-32-4 Hostutter, Price & Wentz 3 . . . 300
1-32-4 Morris, Arkansas Fuel 1 . . . . . dry
36-32-4 Hostutter, Price & Wentz 4 . . . 20
Sumner County—
34-33-2 E. Judd, Plateau Oil 1 . . . . . dry
9-33-1 Miller, Dillard Bros. 1 . . . . . dry
Reno County—
20-26-7w Haynes & Arnold 1 . . . . . abd

Wells completed 13
Production 405
Dry and abandoned 6
Gas 3
Gas production 14,500,000

BUTLER COUNTY
Rigs
32-26-6 Shriver, Foraker 1.
32-30-7 Simon, G. E. Scott 1.
Wells Drilling
16-23-6 Hoe, Ramsey Pet. 1.
30-28-6 Holland, Neiman et al 1.
36-27-5 Yates, Yates Oil & Gas 5.
Shut Down
26-23-7 Sturgeon, A. W. Clark et al 1.
20-27-6 Clark, Empire Gas & Fuel 2.
18-27-7 Eckel, Moulter & Ray 1.
33-27-7 Clary, Baker et al 1.
22-28-6 Petit, John Sharp 1.
17-28-7 Everton, Dutton & Morgan 1.
23-28-7 Brewer, Rich et al 2.
21-29-6 Baker, Tobin et al 1.
5-29-7 Buzzard, Tobin et al 1.
23-29-5 Burch, Bellfort et al 1.
10-27-3 Long, Faulders & Ralston 1.
2-29-2 McFleming, Higgens et al 1.
Rigs, 2; wells drilling, 15; total, 17.

CHAUTAUQUA-ELK COUNTIES
Rigs
21-30-9 Schull, Deerick et al 1.
Wells Drilling
13-29-8 Hanna, Roth et al 1.
Wells Shut Down
6-33-9 Reed, Scott Oil 1.
12-30-9 Donnell, Service Oil 1.
6-29-9 Barnes, Junker et al 2.
Rigs, 1; wells drilling, 4; total, 5.

MONTGOMERY COUNTY
Wells Shut Down
25-33-15 Johnson, Empire G. & F. 1.
Rigs, 0; wells drilling, 1; total, 1.

MARION COUNTY
Rigs
5-22-4 Townsend, Watchorn O. & G. 34, 36.
15-22-4 Barton, Orlando Pet. 19.
20-21-4 Reamey, National Ref. 12.
18-21-5 Greely, Robison Pet. 9.
21-21-5 Urshel, Federal Oil 4, 5, 6.
Wells Drilling
8-22-4 Spier, Kans. Oil 4.
2-20-3 Anderson, Lampe et al 1.
Shut Down
5-22-4 Townsend, Watchorn O. & G. 33.
32-21-4 Egt. Sec. Co., Morgan et al 1.
Rigs, 8; wells drilling, 4; total, 12.

GREENWOOD-WOODSON COUNTIES
Rigs
34-22-13 Eslinger, Theta Oil 8.
20-23-13 Griblin, R. G. Gillespie 7.
23-23-13 Hesler, Dresser Oil 7.
21-27-13 Wisher, Farrell et al 1.
31-22-10 Barnard, Rogers et al 3.
28-22-11 Clark, Gray et al 5.
24-23-10 Burkett, Texas Co. 1.
29-23-10 Thrall, Mission Oil 16, 27.
Thrall, Empire Gas & Fuel 4.
Thrall, Waite Phillips 2.
32-23-10 Thrall, Mission Oil 22, 23, 24, 25, 26.
McKee, Phillips Pet. 3, 4.
5-23-11 Seely, Tidal-Osage Oil 7.
11-24- 9 Lewis, Rogers et al 1.
14-24- 9 Bratton, Bitler & McGinnis 2.
17-24- 9 Marshall, Polhamus et al 1.
3-25- 9 Dibert, Polhamus et al 4.
4-25- 9 Kenley, Pure Oil 3.
30-25- 9 Moss, Derby Oil 9.
28-26- 9 Kuhns, Magnolia Pet. 1.
Wells Drilling
32-23-15 Welde, Rogers & Hinkle 3.
1-21-13 Teft, Pryor & Lockhard 2.
19-22-12 Imthurn, Simmons & Pulaski Oil 1.
20-23-13 Swanson, R. G. Gillespie 15.
21-23-13 Jones, R. G. Gillespie 7.
Griblin, Cosden Oil & Gas 7.
23-22-10 Clopton, Syndicate Oil 1.
31-22-10 Mathers, D. A. Weiss et al 2.
22-23-10 Tucker, Mission Oil 2.
4-24-10 Briketz, Orlando Pet. 1.
24-25-11 Bollinger, S. W. Forrester 1.
14-24- 9 Bratton, Rogers et al 1.
Bratton, Bitler & McGinnis 1.
14-24- 9 Bratton, Henderson & Holden 1.
34-24- 9 Nixon, Gypsy Oil 3.
2-25- 8 Clark, Harwood & Winters 1.
14-25- 8 Welch, C E. Roth & Co. 1.
7-26- 9 Vose, Miller et al 1.
21-26- 9 Klein, Magnolia Pet. 1.
18-28- 9 Dixon, Jamison et al 1.
Shut Down
11-24-12 Dalton, Franklin Oil 13, 14.
5-25-13 Gilroy, International Dev. 1.
9-26-12 Paska, Tatlock et al 1.
17-26-13 Baker, Danciger et al 1.
5-22-10 Pixlee, Kreer et al 1.
Pixlee, Pixlee Pet. 3.
27-22-11 Wick, National Ref. 7.
13-23-10 Edwards, White Eagle O. & R. 1.
27-23-10 Thrall, Mission Oil 22.
5-23-11 Seely, Empire Gas & Fuel 7.
23-24-10 Edwards, J. A. Edwards et al 1.
5-28-11 Anderson, N. F. Clark 2.
8-28-11 Davis, N. F. Clark 4.
15-24- 8 Nancock, Sharpless & Stark 1.
24-24- 9 Moore, Golman et al 1.
4-25- 9 Kenley, Pure Oil 1.
29-25- 9 Ladd, Griggs et al 1.
9-26- 8 Blankenship, Cressier Oil 4.
32-27- 8 Taylor, Haverhill Pet. 1.
30-26-17 Solomon, Equity Oil 1.
Rigs, 25; wells drilling, 41; total, 66.

MISCELLANEOUS
Rigs
Barton County—
21-19-12w Unknown, McMahon et al 1.
Clark County—
21-32-21w Unknown, Watchorn O. & G. 1.
Coffey County—
34-22-13 Efflinger, Theta Oil 7.
Lyon County—
36-21-10 Harriott, Gentles et al 1.
Morris County—
3-12-7 Renier, Northern Oil 1.
Osborne County—
34-10-15w Worley, McKnight 1.
Shawnee County—
30-14-15 Worley, McKnight 1.
Sumner County—
34-30-1w Conn, Allison & Fitzwilliams 1.
Pottawatomie County—
17-9-12 Stewart, Crawford et al 1.
31-9-12 Greshaver, Crawford et al 1.
Wells Drilling and Shut Down
(Shut Down Wells Indicated by *)
Barber County—
33-30-14w Unknown, Wizard Oil 1*.
Barton County—
22-18-13w Everleigh, Mountain States 1*.
27-18-12 Sooy, Cheyenne Oil 1*.
31-18-12 S. J. Tall, Haynes 1*.
Chase County—
24-22-9 Browning, Sinclair O. & G. 1*.
19-21-6 Griffith, Security O. & G. 1*.
19-19-8 Koub, Dave Aller et al 1*.
33-19-9 Wattie Bros., Heppler et al 1.
Clay County—
21-9-4 Unknown, Skow Bros. 1.
Coffey County—
29-20-13 Miller, Waite Phillips 1.
24-20-13 Unknown, Smith et al 1.
12-20-13 Martin, Addison et al 1*.
1-21-13 Edwards, Pryor & Lockhart 1.
Cowley County—
1-35-7 Olson, Sick et al 6*.
36-32-4 Kertly, Watchorn 1*.
18-32-6 Harrison, Southwestern 1.
5-31-6 Eastman, Martin & Wilson 1*.
24-32-4 Kukeek, Buffalo Trust 7.
7-31-6 Eastman, Titus et al 1.
15-30-4 Newton, Elwell, S. & S. Co. 1*.
Newton, Shawver & Sutter 1.
Magnuson, Sutter & Stearns 1.
6-32-5 Elrod, Milkern & Hayhurst 2.
19-32-5 Leirman, McNab et al 1*.
20-33-3 Johnson, Hill & Waite Phillips 1.
32-31-4 Brasher, Brown Bros. 1*.
25-32-4 Gehlik, Boggs et al 1*.
Baker, Torrence & Torrence 3*.
6-32-5 Hilbert, Twin State Oil 1.
35-30-5 Wray, Rogers Bros. 1.
11-30-4 Joslyn, Gypsy Oil 2.
Finney County—
33-21-30 Ladd, Garden City Oil 1*.
Harvey County—
4-23-2 Conway, Mason & Ralston 1.
Branawede, Derby Oil 1.
33-22-2 Brown, Wahn 1.
20-22-2 Sands, Duquette et al 1.
4-23-2 Wetschenski, Newton Oil 3.
3-23-2 Krehbill, Shawver & Sutter 1.
Kingman County—
34-27-7w Garber, Hayes et al 1*.
20-27-7w Sheldon, Fleger 1*.
Lyon County—
13-21-10 Schrader, Super Six 1*.
20-20-12 Miller, Tatlock et al.
Morris County—
17-17-9 Chase, Fisher et al 1.
30-13-6 Foster, Marshall et al 1*.
McPherson County—
34-18-1w Wain, Wright Oil 1*.
Osborne County—
20-10-11w Dorman, Delhi O. & G. 1.
Pottawatomie County—
11-10-12 St. Mary's, Crawford et al 1*.
4-10-12 Doyle, Crawford & Jennings 1*.
Reno County—
20-26- 7 Unknown, Hayes & Arnold 1*.
28-25-6w Unknown, Hayes et al 1*.
Republic County—
23-2-1w Welders, Mitchell O. & G. 1*.
Rice County—
35-20-6w Smith, Younker & Douglass 1*.
Riley County—
20-10-7 Thierer, Wilton Oil 1*.
36- 7-4 Doyle, Gentles et al 1*.
Russel County—
8-12-15w Oswald, Valerious et al 1.
Sedgwick County—
2-29-2e Fleming, Higgins et al 1*.
26-26-1w Alex, Royles & Reagan 1*.
30-29-3w Robinson, Robinson et al 1.
Seward County—
34-34-34w Wood, Defender O. & G. 1.
20-33-33w Seely, Seward Oil 1*.
Sumner County—
34-34-1w Byers, Cloud et al 1*.
13-33-2e Turpin, Brady Bros. 1*.
33-32-2e Young, Frantz et al 1*.
13-31-2e Stout, S. H. E. Oil 1*.
16-30-1w Hitchcock, Champlin Ref. 1*.
Trego County—
5-11-25w Welch, Keys Pet. 2*.
5-11-25w Polen, Cantrell et al 1*.
9-11-22 Unknown, Mississippi Valley Oil 1.
Washington County—
9-5-5 Unknown, Barnes O. & G. 1*.
Rigs, 10; wells drilling, 69; total, 79.

EAST CENTRAL TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Navarro	95	79,942	13	1	3	80	83
Limestone	20	245	12	1	0	4	4
Miscellaneous	2	0	2	0	10	60	70
Total Dec.	117	80,187	27	2	13	144	157
Total Nov.	136	398,628	18	0	42	216	258
Difference	19	318,441	9	2	29	72	101

WELLS COMPLETED
LIMESTONE COUNTY

Anderson, Humphreys Oil 8 10
Berthelsen, Humphreys Oil 26 10
Berthelsen, Humphreys Oil 36 25
Hayter, Humphreys Oil 6 10
Hayter, Humphreys Oil 10 . . . . . abd
Kendrick, Humphreys Oil 1-A 15
Kendrick, Humphreys Oil 14 . . . . . abd
Thomas, Humphreys Oil 22 75
Thomas, Humphreys Oil 23 100
Arnott, J. F. Smith 1 . . . . . dry
Jordan, Grogan et al 1 . . . . . dry
Cook, Mexia Red Seal 1 . . . . . dry
Oliver, Yoder et al 1 . . . . . dry
Cook, Mexia Giant Oil 1 . . . . . dry
Stoker, Texas Co. 1 . . . . . dry
Welch, Humphreys Oil 3 . . . . . dry
Brown, Humphreys Oil 1 . . . . . gas
Gill, Iron Clad Oil 1 . . . . . dry
Bend, Perrian Trustees 1 . . . . . dry
Bassett, Transcontinental Oil 1 . . . . . dry

Wells completed 20
Production 245
Dry 12
Gas 1
Gas production 1,500,000

MISCELLANEOUS COUNTIES

Freestone County—
Bounds, Smith et al 1 . . . . . dry
Lee, Carter & Lytel 1 . . . . . dry

Wells completed 2
Production 0
Dry 2

NAVARRO COUNTY

Currie District—
Longbotham, Snowden & McSweeney 1 125
Nash, Sun Co. 1 . . . . . dry
Morrow, The Texas Co. 1 . . . . . dry
Bounds, Newblock et al 1 . . . . . dry
Powell District—
I. T. Kent, The Texas Co. 15 750
Irvine, Humble O. & R. 13-C . . . . . abd
McKie, Humphreys Oil 54 120
McKie, Humphreys Oil 58 175
McKie, Humphreys Oil 59 125
McKie, Humphreys Oil 60 1800
P. A. Chapman, McMan Oil 11 800
P. A. Chapman, McMan Oil 6 1400
Kellum, Atlantic O. P. 5 3200
Kellum, Atlantic O. P. 10 . . . . . gas
Cerf, R. E. Brooks 4 185
Cerf, R. E. Brooks 6 60
Cerf, R. E. Brooks 7 60
Bush, Gulf Production Co. 2 750
Cerf, Humble O. & R. 9-A 350
Cerf, Humble O. & R. 10-A 300
Cerf, Humble O. & R. 2-B 225
Cerf, Humble O. & R. 3-B 400
Davis, Humble O. & R. 8 2040
Davis, Humble O. & R. 9 1236
Davis, Humble O. & R. 16 300
Fleming, Humble O. & R. 6-A 70
Fleming, Humble O. & R. 7-A 900
Fleming, Humble O. & R. 8-A 618
Fleming, Humble O. & R. 3-B 195
Humphreys, Humble O. & R. 14 250
Humphreys, Humble O. & R. 18 1442
Humphreys, Humble O. & R. 20 800
Humphreys, Humble O. & R. 22 800
Ramsey, Humble O. & R. 9-A 118
Ramsey, Humble O. & R. 10-B 190
Alexander, Hughes Dev. Co. 1 1900
Alexander, Hughes Oil Co. 2 800
Alexander, Hughes Oil Co. 4 2500
Kent, Garland Kent 2 350
Kent, Garland Kent 4 450
Kent, Garland Kent 6 350
Kent, Garland Kent 8 1100
Kent, Garland Kent 11 350
Kent, Garland Kent 15 400
Kent, Garland Kent 16 236
Kent, Garland Kent 19 400
Kent, Garland Kent 10 315
Kent, New Domain Oil 5 . . . . . dry
Clements, Millerman & Dorney 1 . . . . . dry
Ramsey, Humble O. & R. 8-B 160
Ramsey, Humble O. & R. 12-B 1200
Fleming, The Texas Co. 11 135
Sweatman, Empire G. & F. 4 . . . . . dry
H. B. Boyd, Gulf Production Co. 1 . . . . . dry
H. B. Boyd, Gulf Production Co. 2 . . . . . dry
Barron, Gulf Production Co. 6 100
Barron, Gulf Production Co. 7 100
Crews, Gulf Production Co. 8 2200
Crews, Gulf Production Co. 10 100
Crews, Gulf Production 11 1100
Crews, Gulf Production Co. 12 1500
Crews, Gulf Production Co. 13 165
Crews, Gulf Production Co. 14 150
Crews, Gulf Production Co. 15 205
Crews, Gulf Production Co. 16 1400
Crews, Humble O. & R. 11 250
E. L. Kent, Humble O. & R. 1 . . . . . dry
E. L. Kent, Humble O. & R. 3 300
E. L. Kent, Humble O. & R. 4 531
Fleming, Kirby Pet. 2 750
Howell, Mutual Oil 2 900
Howell, Mutual Oil 4 1800
Howell, Mutual Oil 5 2000
Howell, Mutual Oil 6 2000
Howell, Mutual Oil 7 . . . . . dry
Keith, Skelly Oil 2 300
Keith, Skelly Oil 5 2000
Keith, Skelly Oil 6 2400
Keith, Skelly Oil 7 2000
Barron, Sun Co. 1 125
Keith, E. L. Smith Oil 2 100
Keith, E. L. Smith Oil 7 100
I. N. Cerf, Parker et al 3-A 50
J. A. Boyd, Simms Oil 1 400
J. A. Boyd, Simms Oil 3 50
R. B. Boyd, Simms Oil 1 100
Rose, Simms Oil 2 100
Rose, Simms Oil 3 100
Rose, Simms Oil 4 100
Bressie, Tidal-Buttram Oil 1 100
Harvard, Yoder et al 1 250
Howell, Mutual Oil 3 100
Keith, E. L. Smith Oil 8 62
Keith, E. L. Smith Oil 9 100
Barron, Simms Oil 1 . . . . . abd

Wells completed 91
Production 37962
Dry and abandoned 12
Gas 1
Gas production 4,000,000

LIMESTONE COUNTY
Wells Drilling
Priddy, Yoder et al 1.
Cook, Mexia Giant Oil Co. 1.
Bassett, Transcontinental Oil 1.
Head, Tex Rickard 1.
Rigs, 0; wells drilling, 4; total, 4.

NAVARRO COUNTY
Rigs
Kent, Humble O. & R. 13.
Barry, G. Kent 1.
Boyd, Simms Oil 2.
Wells Drilling
Vinson, Seaport Pet. 1.
Keyser, Findley et al 1.
Christian, McMahon et al 1.
Chapman, McMan Oil 7.
Burk, E. Witherspoon et al 10.
Kent, The Texas Co. 16.
Kent, Humble O. & R. 13.
Chapman, McMan Oil & Witherspoon 1.
Kellum, Atlantic O. P. Co. 9.
Woolens, O'Hern et al 1.
Woolens, Barclay & Meadows 1.
Cerf, R. E. Brooks 5.
Hill, Elliott et al 2.
Bush, Gulf Production Co. 3.
Cerf, Humble O. & R. 7-A, 8-A, 10-A, 4-B, 5-B.
Hill, Humble O. & R. 1, 2.
Walker, Humble O. & R. 4.
Ramsey, Humble O. & R. 14-B.
Alexander, H. J. K. Hughes Dev. Co. 3, 5.
Hill, Hosier et al 1.
Kent, Garland Kent 7, 9, 12, 14, 17, 18, 20.
Cerf, McMahon et al 2.
Cerf, Parker et al 1-B.
Cerf, E. L. Smith Oil 1.
Hill, Strukey & Strukey 1.
Humphreys, Terrell Prod. Co. 1.
Clements, Millerman & Dorney 1.
Fleming, Upchurch et al 1, 2.
J. Kellum, Atlantic O. P. Co. 8, 10, 11, 12.
Goldman, Atlantic O. P. Co. 1.
Crews, Gulf Prod. 17.
Harvard, Gilbert Johnson 1, 2, 3, 4.
Holmes, McMahon et al 1.
Woolens, McIntyre et al 1.
Howell, Mutual Oil 8.
Woolens, Reeves & Jackson 1.
Boyd, Simms Oil 2, 4.
H. B. Boyd, Simms Oil 4.
Rose, Simms Oil 5, 6, 7, 8.
Kellum, Simms Oil 1, 2, 3.
Right of Way, T. & B. V. Ry. Co. 3, 5.
Boyd, Webster et al 1.
Harvard, Yoder et al 2, 3.
Smith, Meade et al 1.
Jackson, Taylor et al 1.
Autry, The Texas Co. 1.
Currie District—
Bounds, Humphreys Oil 8.
Longbotham, Snowden & McSweeney 7, 11.
Morrow, Trapshooters Reilly 1.
RICHLAND DISTRICT
Brown, McDonald et al 1.
Swink, Miller & Lewis 1.
—Miscellaneous—
Thornton, Ranger Vindicator Co. 1.
Rigs, 3; wells drilling, 80; total, 83.

MISCELLANEOUS
Rigs
Bowie County—
Chalk, O'Bannon Bros. 1.
Milam County—
Ashley, Milam-Lo Pluet 1.
Raines County—
Hunt, Lovewell Oil Co. 1.
Smith County—
White, Whittaker & Maddox 1.
Anderson County—
Turner, Hughes et al 1.
Cass County—
Spears, Bankers Trust 1.
Caster, Gibbs Pet. Co. 1.
Falls County—
Allen, Southern Rose O. & G. 1.
Henderson County—
Kade, Ben Crow Oil Co. 1.
Pully, Mitcham et al 1.
Wells Drilling and Shut Down
Freestone County—
Smith, Pope et al 1.
Knight, O. K. O. & G. 1.
Bounds, Trapshooter Reilly 1.
Henderson County—
Wood, F. Haynes 1.
Johnson, Pipe Grove Oil Co. 1.
Ziensendanger, Mexia Henderson Oil Co. 1.
Smith-Logan, Union Pet. Co. 1.
Hunt County—
Hays, Tri-Cities O. & G. 1.
Miller, McPhail O. & G. 1.
Kaufman County—
Carlisle, Roscie et al & T. P. C. & G. 1.
Porter, Trapshooter Reilly Oil Co. 1.
Leon County—
Bolden, Leon County Oil Dev. 1.
McKinnon, Kechi O. & G. 2.
Smith, Deep Springs Oil.
Carrington, Mexia Marquet Oil Co. 1.
Milam County—
Posey, Guberson et al 1.
Reed, Rosebud Mexia 1.
Lotters, F. C. Nelson 1.
Stark, Williams & Hail 1.
Bremond, Twin City O. D. 1.
McLennan County—
Shelton, Tudor Oil 1.
Schnecker, Mexia Central Oil 1.
Halloway, Mexia Commonwealth Pet. Co. 1.

Anderson County—
Manning Plant, Palestine Oil Co. 1.
Bowie County—
Parkley, Baldy Springs Oil Co. 1.
Hooks, North Boston O. & G.
Taylor, Tri-State Oil Co. 1.
Cass County—
Evans, Caldwell et al 1.
Crew, Simms Oil Co. 1.
Dallas County—
Grimes, Carnahan Drg. Co. 1.
Gracey, Dallas Pet. & Dev. Co. 1.
Davis, It's In Dallas Oil Co. 1.
Mitchell, It's In Dallas Oil Co. 1.
Eubanks, W. F. Nabors et al 1.
Ellis County—
Hoesmer, Mexia Tri State Co. 1.
Falls County—
Price, Balto-Tex Oil Co. 1.
Jennings, Inland Oil Co. 1.
Peters, Grove Edwards 1.
Peacock, High Banks Oil Co. 1.
Harlan, Texola Pet. Co. 1.
Clark, Peace Pet. Co. 1.
Covington, Mayflower Oil Co. 1.
Brown, Edwards et al 1.
Red River County—
Simmons, Clarksville Texas Oil Co. 1.
Arnold, Isabelle Gibbons Co. 1.
Antone, Johnson Pet. Snyd. 1.
Robertson County—
Holloway, Campbell et al 1.
Walker, Kentucky-Texas Oil Co. 1.
Stephens, Texola Oil Co. 1.
Smith County—
Sykes, Rainbow Oil Co. 1.
Carey, North Texas Oil Co. 1.
Phillips, Apex Oil Co. 1.
Titus County—
Oregon, Boeler et al 1.
Van Zandt County—
Jones, Mexia Drg. Co. 1.
Dunbar, Terrell Oil Co. 1.
Williamson County—
Ganzart, Amarillo Oil Co. 1.
Sebran, McNeil & McDowell 1.
Koonson, United Oil Workers 1.
Wood County—
Adrian, Golden Oil Co. 1.
Senter, Texas O. & M. Co. 1.
Rigs, 16; wells drilling, 60; total, 70.

NORTH CENTRAL TEXAS

Including December 20, 1923

District—	Comp.	Prod.	Dry	Gas
Wichita	16	772	6	0
Burkburnett	20	1,306	4	0
Eastland	10	252	2	0
Stephens	11	1,234	2	0
Young	5	283	1	1
Archer	41	2,926	7	0
Wildcats	14	368	7	3
Total December	117	7,141	29	4
Total November	75	7,418	25	4
Difference	42	277	4	0

Summary of New Work

District—	Rigs	Drg.	Ttl.
Wichita	10	25	35
Burkburnett	4	18	22
Eastland	6	19	25
Stephens	9	18	27
Young	2	19	21
Archer	18	51	69
Wildcats	24	53	77
Total December	73	203	276
Total November	61	184	245
Difference	12	19	31

WICHITA AND WILBARGER COUNTIES

WELLS COMPLETED

Waggoner, The Texas Co. 285 225
Burnett, Texhoma O. & R. Co. 2-B 25
Daume, Stedham et al 2 ..... 5b
Allingham, the Herford O. Co. 11 100
Waggoner, Magnolia Pet. Co. 26-A 14
Waggoner, Texhoma O. & R. Co. 10-F .. 120
Douglas, Magnolia Pet. Co. 6 6
Waggoner, Magnolia Pet. Co. 1 20
Burnett, Simms Oil Co. 13 80
Douglas, Brewer et al 1 ..... dry
Douglas, Buffalo Texas O. Co. 4-B ..... dry
Waggoner, Texhoma O. & R. Co. 1-J .. dry
Burnett, Hartford Trust Co. 6 ..... dry
Burnett, Perkins et al 1 ..... dry
Waggoner, Texhoma O. & R. Co. 27-A .. 132
Potts, Knight et al 1 ..... dry
Wells completed 16
Production 772
Dry 6

BURKBURNETT

Langford, Langford et al 7 ..... $6
Saunders, McDabb Oil Co. 2 ..... dry
Saunders, John O'Neil 2 140
Hirschi, the Sun Co. 23 100
Eads, Kemp et al 5 72
Reilly, Magnolia Pet Co. 90 20
Reilly, Magnolia Pet. Co. 91 5
Reilly, Magnolia Pet. Co. 98 ..... dry
Reilly, Magnolia Pet. Co. 99 8
Hewitt, Coleman Drilling Co. 1 ..... dry
Dale, Gulf Prod. Co. 13 250
Potter, McDabb Oil Co. 2 30
Saunders, McDabb Oil Co. 3 75
Reilly, Magnolia Pet. Co. 92 20
Roller, Robinson Oil Co. 6 15
Chapman, Morgan et al 1 ..... dry
Eads, Northwestern Oil Co. 1 2
Saunders, John O'Neil 3 250
Saunders, Perkins et al 1 145
Hirschi, The Sun Co. 24 100
Wells completed 20
Production 1306
Dry 4

ARCHER COUNTY

Wilson, Barkley et al 1 60
Wilson, Barnes et al 1 70
Netherton, Burns et al 1 ..... dry
Wilson, Chenault et al 4-D 25
Wilson, Empire G. & F. Co. 1 17
Parrish, Maer et al 1 ..... dry
Mrs. Carter, Maer et al 6 100
Wilson, 66 Oil Co. 2 300
Mrs. Carter, Staley et al 3 60
Wilson, Stone et al 1 ..... dry
Wilson, Chenault et al 4-C 68
Wilson, Chenault et al 5-D 75
Wilson, Featherstone et al 2-C ..... dry
Mrs. Carter, Gwynn et al 4 125
Parrish, Lane et al 1 7
Parrish, The Oil Investment Co. 2-B ... 50
Wilmont, Sibley et al 5 115
Richardson, the Swastika O. Co. 9 50
Carter Bros., The Texas Co. 8 122
Wilson, Bell et al 3 45
Wilmont, Bohler et al 2 120
Wilmont, Dale et al 6 140
Wilson, Grandberry Drilling Co. 1 10
Mrs. Carter, Wynn et al 2-A 100
Wilson, Jetter et al 1 175
Browning, Kouri et al 1 ..... dry
White, Murchison et al 1 ..... dry
Wilmont, Sibley et al 6 75
Carter, Staley et al 4 50
Wilmont, Underwood Drilling Co. 2 ... 35
K. & K., White Oil Corp. 11 35
Carter Bros., The Texas Co. 9 80
Wilson, Cranfill et al 1 ..... dry
Wilson, Empire G. & F. Co. 1-B 15
Wilson, Featherstone et al 3-B 40
Wilson, Featherstone et al 3-C 65
Mrs. Carter, Gwynn et al 5 75
Wilson, Kentucky Oil Corp. 2 50
Parrish, Oil Investment Co. 3-B 30
Egbert, R. M. F. Oil Co. 1 385
Wilson, 66 Oil Co. 5-B 100
Carter Bros., Sunshine State O. & R. Co. 11 57
Wells completed 41
Production 2926
Dry 7

YOUNG COUNTY

Hughes, Dudley Miller et al 2 ..... gas
Benson, Smith et al 1 8
Moren, Calmo Oil Co. 3 200
Hughes, Seaboard O. & G. Co. 4-A 75
Wells completed 5
Production 283
Dry 1
Gas 1
Gas production 8,000,000

STEPHENS COUNTY

Beck, The Dalsa Oil Co. 1 4
Shipley, Foster et al 3-C 360
Wild, the Humble O. & R. Co. 1 ..... dry
George, the Magnolia Pet. Co. 2 15
Davis, Scott and Bateman 1 310
McCauley, Magnolia Pet. Co. 12 95
Binney, Texas & Pacific C. & O. Co. 48 75
Cobb, Critten et al 1 175
Childs, Equity Pet Co. 10 150
Brown, Prairie O. & G. Co. 1-B ..... dry
W. & C., Walker & Caldwell 14 50
Wells completed 11
Production 1234
Dry 2

EASTLAND COUNTY

Shugart, Gholsen Oil Co. 2 20
Merrill, the Humble O. & R. Co. 3 60
Harris, Kokomo Oil Co. 1 ..... dry
Ross, Magnolia Pet. Co. 3 20
Underwood, Knight et al 3 30
Rogers, Magnolia Pet. Co. 3-A 20
Hightower, Panhandle O. & R. Co. 6 ... 30
Mahan, Harrell et al 1 ..... dry
Westmoreland, Magnolia Pet. Co. 14 ... 7
Webb, Panhandle Ref. Co. 5 65
Wells completed 10
Production 252
Dry 2

WILDCATS

Mitchell County—
Morrison, Henry Reilley et al 1 60
O'Neil, Sloan et al 1 150
Morrison, Underwriters P. & R. Co. 5 .. 150
Montague County—
Gist, The Texas Co. 1-A ..... gas
Palo Pinto County—
Poer, Cunningham et al 1 ..... dry
Carter, Ligon Oil Co. 1 ..... dry
Thomas, Thomas et al 1 ..... gas
Callahan County—
Hayden, Curtis et al 1 ..... dry
Coleman County—
Shields, Caldwell et al 1 ..... dry
Brown County—
Smith, Masterson et al 1 ..... dry
Chambers, Scott et al 1 ..... dry
Clay County—
Scott, Knox and Finley Dev. Co. 1 8
Edrington, Lone Star Gas Co. 7 ..... dry
Stine, Ross et al 1 ..... gas
Wells completed 14
Production 368
Dry 7
Gas 3
Gas production 37,000,000

WICHITA AND WILBARKER COUNTIES

Rigs

Douglas, Camp O. & G. Co. 7-B.
Waggoner, Texhoma O. & R. Co. 12-F.
F. W. & D. C., Greenwood et al 1.
Burnett, Empire G. & F. Co. 69.
Burnett, Texhoma O. & R. Co. 1-C.
Waggoner, Magnolia Pet. Co. 2, 32-A.
Waggoner, Texhoma O. & R. Co. 28-A.
Waggoner, Black O. Co. 5-B.
Rhodes, Perkins et al 1.

Wells Drilling

Douglas, Buffalo Texas O. Co. 4-B.
Waggoner, Kruger et al 7.
Honaker, Memphis Pet. Co. 3.
Waggoner, Rowe Drilling Co. 1.
Waggoner, Texhoma O. & R. Co. 1-J.
Waggoner, Bass et al 6.
Jennings, Four States O. Co. 7.
Fisher, Fisher et al 3-B.
Douglas, Magnolia Pet. Co. 7.
Burnett, Magnolia Pet. Co. 78-B, 1-A.
Waggoner, Noel et al 1.
Marshall, Panhandle O. & R. Co. 1.
Burnett, Perkins et al 10.
Burnett, Simms O. Co. 14.
Waggoner, Texhoma O. & R. Co. 11-F.
K. & K., Carter et al 2.
Terhune, Comac O. Co. 1.
Davis, Kentucky O. Corp. 1.
Love, Parker Bros. 1.
Jackson, Chappell et al 1.
Waggoner, Adams et al 1.
McCaleb, Robinson et al 1.
Waggoner, Noble O. Co. 1.
Stephens, South Vernon O. Co. 1.
Rigs, 10; wells drilling, 25; total, 35.

BURKBURNETT

Rigs

Saunders, Gulf Prod. Co. 1.
Hortoin, Magnolia Pet. Co. 21.
Saunders, Perkins et al 4.
Hirschi, Pigg O. Co. 19.

Wells Drilling

Kennedy, Baldwin Bros. 12-C.
Burnett, Brown et al 2.
Dale, Gulf Prod. Co. 15.
Van Horn, Howell et al 1.
Eads, Kemp et al 6.
George, Lewis et al 2.
Holcomb, Magnolia Pet. Co. 22.
Hortoin, Magnolia Pet. Co. 20.
Holtzen, Magnolia Pet. Co. 7.
Saunders, J. O'Neil 4, 5, 6.
Saunders, Perkins et al 2.
Hirschi, Pigg O. Co. 17, 18.
Case, Richardson et al 1.
Hirschi, The Sun Co. 25.
Wolf, Wellman et al 1.
Rigs, 4; wells drilling, 18; total, 22.

ARCHER COUNTY

Rigs

Martini, Armstrong et al 1.
Wilmont, Bohler et al 3.
Wilson, Brannon et al 1.
Wilmont, Camp O. & G. 5.
Wilson, Johnson et al 3.
Brown, King, Lewis et al 1.
Nelson, Larkin et al 1.
Wilson, Maer et al 2.
Wilson, Morris et al 2.
Wilson, Murchison et al 1-B.
Parrish, Oil Investment Co. 4-B.
Warren, Orth et al 1.
Parrish, Perkins et al 1.
Richardson, Shamrock O. Co. 3.
Helm, Stewart et al 1.
Carter Bros., Sunshine State O. & R. Co. 5, 14.
Wilson, White O. Corp. 1.

Wells Drilling

Carter Bros., The Texas Co. 10.
Wilson, Mohler et al 1.
Mrs. Carter, Boyd et al 1.
Wilson, Bridwell et al 1.
Wilson, Camp O. & G. Co. 2.
Wilson, Chenault et al 5-C, 6-B, 7-B.
Richardson, Clayton et al 2.
Wilmont, Dale et al 7.
Ferguson, Dilday et al 1.
Wilson, Dorain et al 1.
Wilson, Featherstone et al 7-C.
Jackson, Ferguson et al 1.
Boone, Gatewood et al 1.
Wilson, Graham et al 1.
White, Gould et al 2.
Ambercrombie, Green et al 1.
Parrish, Hardeyeste et al 1.
Ambercrombie, Hudspeth et al 2.
Wilson, Jetter et al 2.
Wilson, Johnson et al 1, 2.
Wilson, Kentucky O. Corp. 1.
Bridwell, Lynch et al 1.
Wilson, Maer et al 1.
Mrs. Carter, Maer et al 7.
Wilson, Morris et al 1.
Wilson, Moore et al 1.
Wilson, Murchison et al 1.
O'Donnell, Norton et al 1.
Ford, case et al 1.
Parrish, Payne et al 1.
Wilson, Riner et al 1, 2.
Egbert, R. M. F. Oil Co. 2.
Wilson, R. M. F. Oil Co. 1.
Miller, Samfley et al 1.
Richardson, Shamrock O. Co. 1-B.
Wilson, 66 O. Co. 4-B, 6-B.
Nichols, Staley et al 1.
Ford, Thomas et al 1.
Farmer, Sun Oil Co. 3.
Carter Bros., Sunshine State O. & R. Co. 12, 13.
Parrish, Sunshine State O. & R. Co. 2.
Neal, Swastika O. Co. 1.
Wilmont, Underwood Drilling Co. 3.
Wilson, Underwood Drilling Co. 1.
K. & K., Dr. Wallace 16.
Garvey, Wall-Duke O. Co. 1.
Rigs, 18; wells drilling, 51; total, 69.

STEPHENS COUNTY

Rigs

Corbett, Cox Consolidated O. Co. 2.
Hill, Mid-Kansas O. & G. Co. 12.
Richardson, Mid-Kansas O. & G. Co. 3.
Atkins, Prairie O. & G. Co. 15.
Williams, Spratt et al 1.
Parks, Fidelity O. Co. 1.
Gardenshire, Fidelity O. Co. 5.
Dodd, Haile et al 1.
Bradford, McGovern et al 1.

Wells Drilling

Cougher, Mid-Kansas O. & G. Co. 2.
Parks, Corts et al 1.
Compton, Curry Pool O. Co. 1.
Sanders, Graham et al 1.
Jones, Haile et al 1-B.
Brown, Magnolia Pet. Co. 4.
Rush, Magnolia Pet. Co. 12.
Walker, Magnolia Pet. Co. 4.
Boyett, Mahlstedt et al 1.
W. & C., Owens et al 1.
Martin, Weekly Pet Co. 2.
Brown, Pierce et al 1-A.
Bradford, Whaley et al 1.
Jones, Rosser et al 5.
Davis, Scott et al 2.
Henderson, Sinclair O. & G. Co. 5.
Ashmore Texas & Pacific C. & O. Co. 3.
Lee, Texas & Pacific C. & O. Co. 1.
Rigs, 9; wells drilling, 18; total, 27.

EASTLAND COUNTY

Rigs

Westmoreland, Brothers et al 2.
Westmoreland, McLester et al 2.
Abernathy, Post-Duke O. Co. 3.
Hatten, Clayton et al 1.
Doolin, Lobaugh et al 1.
White, McBride et al 1.

Wells Drilling

Collins, Ablon et al 1.
Steel, Clayton et al 1.
Brelsford, Donnelly Bros. 1.
Miller, Eby et al 5.
Merrill, Humble O. & R. Co. 4.
Edison, Knox-Lewis O. Co. 2.
Ross, Magnolia Pet. Co. 4.
Webb, Ocheltree et al 1.
Hightower, Panhandle O. & R. Co. 7.
Gilbert, Rosenfield et al 1.
Bond, Root et al 4.
Harwood, Clayton et al 1.
Rio Bravo, Clayton et al 1.
Johnson, Daugherty et al 1.
Luse, Mahew et al 1.
Walker, Root et al 1.
Ray, Stovar O. Co. 1.
Lewis, Texas Dev. Co. 1.
Brooks, Prairie O. & G. Co. 5-A.
Rigs, 6; wells drilling, 19; total, 25.

YOUNG COUNTY

Rigs

Hughes, Associated O. Synd. 1.
Hinson, Calmo O. Co. 1.

Wells Drilling

Campbell, Bullington et al 1.
Mahoney, Byrens et al 1.
Hockaway, Gulf Prod. Co. 1-A.
Vick, Narrow et al 1.
Wild, Logan et al 1.
Carter, McQuire et al 1.
Logan, McKenzie et al 1.
Whittenburg, Mann et al 5.
Moren, Mid-Kansas O. & G. Co. 1.
Bower, Nash et al 1.
Scott, North American Ref. Co. 1-B.
Boley, Peters et al 1.
Wilburn, Richardson et al 1.
Grubbs, Robinson et al 1.
Hughes, Seaboard O. Co. 4.
Bower, Shamrock O. Co. 3-A.
Carter, Snowden et al 1.
Graham, Whitehead et al 1.
Jonnson, Whitehead et al 1.
Rigs, 2; wells drilling, 19; total, 21.

WILDCATS

BAYLOR COUNTY

Wells Drilling

Portwood, Waggoner et al 1.

CLAY COUNTY

Rigs

Dean, Pipes et al 1.
Stine, Cumley et al 1.
Zihlman, Seaboard O. & G. Co. 1.

Wells Drilling

Kinder, Crude O. P. Co. 1.
Boddy, Gulf Prod. Co. 1-A.
Worsham, Gulf Prod. Co. 3.
Skelly, Lone Star G. Co. 9.
Panhandle, Lone Star G. Co. 7.
Myers, Nebraska O. & G. Co. 1.
Hull, Nix, Moore et al 1.

COOKE COUNTY

Wells Drilling

Jones, Red River Drilling Co. 1.

JACK COUNTY

Wells Drilling

Woodward, Duncan et al 1.

KNOX COUNTY

Wells Drilling

Clark, Brazos Bend O. Co. 1.

MONTAGUE COUNTY

Rigs

Rucktashel, The Texas Co. 1.

Wells Drilling

Beasley, Amerado O. Corp. 1-A.
Benton, Gulf Prod. Co. 1.
Howard, Masco O. Co. 1.
Crenshaw, Texon O. Co. 1.

THROCKMORTON COUNTY

Wells Drilling

Ray, Monroe Prod. Co. 1.
Reynolds, Richardson et al 1.

ARMSTRONG COUNTY

Wells Drilling

J. A. Ranch, Magnolia Pet. Co. 1.

CARSON COUNTY

Wells Drilling

Burnett, The Texas Co. 3.
Burnett, Gulf Prod. Co. 3-A.
Sandford, Humphreys O. Co. 1.
Burnett, Silk et al 3.

COLLINGSWORTH COUNTY

Wells Drilling

Stokley, Campbell et al 1.

GRAY COUNTY

Wells Drilling

Morris, Holmes et al 1.
Saunders, The Texas Co. 1.

HEMPHILL COUNTY

Wells Drilling

Hopkins, Pinev O. Co. 1.

HUTCHINSON COUNTY

Rigs

Johnson, Whittacre et al 1.

Wells Drilling

Sandford, Coline O. Co. 1.
Johnson, Humphreys O. Co. 1.
Johnson, Montgomery et al 1.
Smith Capers, McGee et al 1.
Bivens, Prod. & Ref. O. Co. 1-B.

POTTER COUNTY

Wells Drilling

Masterson, Prod. & Ref. O. Co. 2.
Bivens, Prod. & Ref. O. Co. 2-A.

WHEELER COUNTY

Wells Drilling

Sheldon, Tyrell et al 1.

BROWN COUNTY

Rigs

Windham, Infield Pet. Co. 5.

Wells Drilling

Windham, Winfield Pet Co. 4.

PALO PINTO COUNTY

Rigs

River Bed, Scott et al 1.
Carter, Skelly O. Co. 1.

Wells Drilling

Cropper, S. et al 1.
Jones, Jones et al 1.
Finch, Nelson et al 2.
Costello, Simms O. Co. 1.
Weldon, Zada Bell O. Co. 1.
Stewart, Texas & Pacific C. & O. Co. 144.
Robinson, Texas & Pacific C. & O. Co. 1.

MITCHELL COUNTY

Rigs

Morrison, The California Co. 2.
Butler, The California Co. 1.

Wells Drilling

Miller, The California Co. 2.
Badgett, Kelsay et al 1.
Smart, Sloan O. Co. 2.

SHACKELFORD COUNTY

Brooks, Donnelly et al 1.
Elliott, Kerbow et al 1.
Miles, Landreth O. Co. 1.
Poindexter, Landreth O. Co. 11, 13.
George, Magnolia Pet. Co. 3.

Wells Drilling

Parrish, Connelly et al 1.
Elliott, Humble O. & R. Co. 1.
Jackson, Humble O. & R. Co. 1.
Poindexter, Humble O. & R. Co. 1-E.
Lynch, Landreth O. Co. 2.
Poindexter, Landreth O. Co. 14.
Black, Texhoma O. & R. Co. 2.

SCURRY COUNTY

Wells Drilling

Moore, The Lou Tex Corp. 1.
Rigs, 24; wells drilling, 53; total, 87.

N. LOUISIANA-ARKANSAS

Summary of Field Operations

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Smackover District, Union Co..	25	6,410	4	2	32	55	57
Ouachita Co.	35	5,045	2	1	27	44	71
Stephens Dist., Columbia and Ouachita Cos	1	25	0	0	2	0	2
Bellevue ...	10	340	0	0	4	8	12
Caddo	3	100	0	0	3	5	8
Claiborne	2	0	2	0	2	0	2
De Soto	0	0	0	0	0	1	1
Red River ..	2	0	1	0	0	2	2
La. Wildcats	12	0	4	8	12	34	46
Ark Wildcats	5	460	2	0	8	17	25
Total Dec.	95	12,380	15	11	90	166	256
Total Nov.	152	40,438	29	18	94	171	265
Difference	57	28,058	14	7	4	5	9

SMACKOVER DISTRICT
UNION COUNTY

Completions

6-16-15 Ferguson, Arkansas Natural Gas Co. 2 ..... gas
17-16-15 J. Murphy, Barnsdale & Foster, 3 400
17-16-15 J. Murphy, Barnsdale & Foster, 4 500
19-16-15 Smith, Burton et al, 1 200
17-16-15 Harrell, J. E. Crosbie, 1 200
17-16-15 Harrell, Chew et al, 1 500
17-16-15 Harrell, J. E. Crosbie, 2 300
22-16-15 W. H. Murphy, Federal Petroleum Co., 1 300
16-16-15 T. C. Goodwin, Gulf Ref. Co., 4 120
9-16-15 T. C. Murphy, Gulf Ref. Co., 2 dry
21-16-15 James, Higgins Oil & Ref. Co., 2 250
14-16-15 Murphy, Higgins Oil & Ref. Co. A-3 2500
14-16-15 E. G. Murphy, Humble Oil & Ref. Co., 2 250
32-15-16 Saxon, Humble Oil & Ref. Co., 1 85
32-15-16 Saxon, Humble Oil & Ref. Co., 2 75
1-16-16 Primm, Hunt et al, 1 ..... dry
33-15-16 Meakin, Magnolia Petroleum Co., 2 ..... dry
7-16-15 Lawton, Murphy Trustees, 2.. gas
17-16-16 Childs, Nelson et al, 1 ..... dry
22-16-15 Lengelbach, Standard of La. 1 25
5-16-16 C. L. Saxon, Standard of La. B-1 110
22-16-15 J. T. Murphy, The Texas Co., 2 25
17-16-15 Vestal, Tidal Osage Oil Co., 2 500
6-16-15 Rice, Weatherbee et al, 1.... 30
7-18-14 Van Hook, Woodley Pet. Co., 7 40

Wells completed 25
Production 6410
Dry 4
Gas 2
Gas production 40,000,000

SMACKOVER DISTRICT
OUACHITA COUNTY

Completions

31-15-16 Patton, Ark. Nat. Gas Co., 2 250
30-15-16 Patton, Ark. Nat. Gas Co., 3.. 40
31-15-16 Patton, Burch-Walker, 4..... 200
24-15-17 Berry, Dr. Clark, 1 20
30-15-16 Shirey, El Dorado Union Oil Co., 2..... 150
28-15-16 Hardin, Forest Oil Co., 1 75
32-15-16 Patton, Gulf Ref. Co., 1..... 20
10-15-18 J. H. Dawson, Gulf Ref. Co. C-1 ..... dry
30-15-16 Watts, Giles et al, 2 150
31-15-16 Patton, Houston Oil Co., 1 .... 20%
27-15-15 Reynolds, Houston Oil Co., 2.. 25%
30-15-16 Solmson, Hunt et al, 2 ..... 35%
28-15-16 Hardin, Invaders Oil Co., 4.... 60
32-15-16 Myar Est., Keene & Woolfe, 4 175
30-15-16 Murphy, Lanier et al, 1 200
30-15-16 Shirey, Lanier et al, 1 100
24-15-17 Berry, Lewis & Clark, 3 ..... 20%
29-15-16 McElroy, Majestic-Smackover Oil Co., 1 250
28-15-16 Hardin, Miller et al, 4 85
28-15-16 Reeves, Ohio Oil Co., 2 ..... 5%
24-15-15 Snyder, Owenwood Corp., 1 .. 25%
24-15-15 Snyder, Owenwood Corp., 2.... 400
25-15-17 Smith, J. D. Reynolds, 1 200
31-15-15 T. A. Laney, Simms O. Co., 2.. gas
30-15-16 McRea, Smith Ref. Co., 1 80
30-15-16 McRea, Smith Ref. Co., 2 130
29-15-16 Taylor, Snowden & McSweeney, 2 ..... 20%
30-15-16 Fee, Solmson et al, 1 65
4-16-15 Hardy, Standard of La., 9 .. 30
23-15-16 Solmson, Standard of La., 2 .. 175
31-15-16 Patton, The Sun Co., 2 100
29-15-16 Solmson, The Texas Co., 2 150
20-15-16 Minor, Transcontinental Oil Co., 1 ..... dry
30-15-16 Watt, White et al, 2 200
32-15-16 T. C. Patton, Woodley Petroleum Co., 1 240

Wells completed 35
Production 5045
Dry 2
Gas 1
Gas production 20,000,000

STEPHENS FIELD
OUACHITA COUNTY

Completions

30-15-19 John Wepfer, Atlantic Oil Pro. Co., 3 25

BELLEVUE FIELD
BOSSIER PARISH

Completions

15-19-11 R. B. & W., Humble Oil & Ref. Co., 20 30
15-19-11 R. B. & W., Humble Oil & Ref. Co., 24 30
15-19-11 R. B. & W., Humble Oil & Ref. Co., 25 60
15-19-11 R. B. & W., Humble Oil & Ref. Co., 26 20
10-19-11 Elston, National Oil Co., 12 15
23-19-11 Strange, Olmstead et al, A-10 40
23-19-11 Strange, Olmstead et al, A-11 35
23-19-11 Strange, Olmstead et al, A-12 10
15-19-11 Scanland, R. O. Roy, 22 60
10-19-11 B. & W., Standard of La., 10 40

Wells completed 10
Production 340

CADDO PARISH

Completions

13-21-15 State, Dixie Oil Co., 2 10
5-20-15 Thigpen, Fortuna Oil Co., 10.. 5
32-21-15 Brown Fee, Muslow Oil Co., 2 35

Wells completed 3
Production 100

CLAIBORNE PARISH

Completions

10-23- 7 Teague, Ohio Oil Co., 1 ..... dry
28-20- 6 Craighead, Cox et al, 1..... dry

Wells completed 2
Production 0
Dry 2

RED RIVER JARISH

Completions

7-12-10 Pugh, Fortuna Oil Co., 58 10
10-12-10 Fletcher, U. S. Drg. Co., 3 .. dry

Wells completed 2
Production 10
Dry 1

LOUISIANA WILDCATS
MOREHOUSE PARISH

Completions

20-20- 5 Plemomns, Morris Trst., 1 .... gas
28-20-5e White, Morris Trst., 1 ..... gas

BIENVILLE PARISH

Completions

21-17- 8 Leona Scott, Standard of La., 1 ..... dry

OUACHITA PARISH

Completions

22-19- 5 Flournoy, Chester Carbon Co., 1 ..... gas
8-19- 5 Richie, Consumers Carbon Co., 2 ..... gas
20-19- 5 Hancock, Cosmos Carbon Co., 2 gas
18-20- 5 Fee, Magnolia Carbon Co., 1.. gas
27-19- 5 Fee, Southern Carbon Co., 24 gas
33-19- 5 O'Neal, The Texas Co., 3 .... gas

SABINE PARISH

Completions

33- 9-11 Raines, Gladys Belle Oil Co., 1 dry

UNION PARISH

Completions

23-23-1e Newcome, Collins & Woodley, 1 dry
12-23-1w So. Co. Trst., Love Bros, 1 .. dry

Wells completed 12
Production 0
Dry 4
Gas 8
Gas production 110,000,000

ARKANSAS WILDCATS
CLARK COUNTY

Completions

22- 8-18 Littlejohn, Littlejohn & Hall, 1 ..... dry

NEVADA COUNTY

Completions

10-14-21 Waters, Ames et al, 3 350
10-14-21 Waters, Ames et al, 4 100
10-21-21 Westmoreland, Day Trst., 1 .. dry
10-14-21 P. R. Womack, Dixie Oil Co., 2 10

Wells completed 5
Production 460
Dry 1
Gas 0

SMACKOVER DISTRICT
UNION COUNTY

Rigs

21-16-15 Murphy, Bement et al, 3.
15-16-15 Wells, Clark & Melatt, 3.
25-16-16 Burton, Dickson et al, 2.
18-17-14 Polk & Ezell, Donoway et al, 3.
28-17-12 W. H. Murphy, Federal Pet. Co., 3.
21-16-15 Ballard, Houston Oil Co., 1.
7-17-14 Stevens, Hudson & Brooks, 1.
14-16-15 E. G. Murphy, Humble O. & R. Co., 5.
3-16-16 F. Murphy, Humble O. & R. Co., 2.
21-16-15 Hays, Humphries Oil Co., 1.
8-16-16 Fegg, Magnolia Pet. Co., 1.
16-16-15 McRea, McPherson Oil Co., 3.
5-16-15 Flenniken, Morris Drg. Co., 7.
7-16-15 Lawton, Murphy, Trst., 1.
15-16-15 Wells, Noe et al, 2.
8-16-15 Billyju, Oil Operators Trst., 4, 2.
4-16-15 Hays, Oil Operators, Trst., 1.
8-16-15 G. E. Murphy, Oil Operators, Trst., 2.
26-16-15 Goodwin, Pherris et al, 1.
6-16-15 Ferguson, Parish et al, 2.
18-16-15 G. F. Murphy, Ramage et al, 1.
7-17-14 Stevens, Russell et al, 1.
11-16-15 Alphin, Standard Oil Co., 1.
6-16-15 McClanahan, Standard Oil Co., 10.
22-16-15 Lingelback, Standard Oil Co., 2.
5-16-16 C. L. Saxon, Standard Oil Co., C-1.
7-17-14 Tufts, Stock et al, 1.
7-17-14 Tufts, Steen et al, 1.
17-16-15 Smith, Thorpe et al, 1.
8-16-15 Lyell, Wells et al, 3.
22-15-16 Saxon, Worthen & Orr, 1.

Wells Drilling

4-19-15 Cullens, Ark. Nat. Gas Co., 6.
2-19-15 Snyder, Berfet et al, 1.
19-17-14 Cranston, Big Four Oil Co., 2.
9-18-12 Tuberville, Bondurant et al, 1.
17-16-15 Burns, Browder et al, 1.
7-18-15 Hinson, Constantin O. & R. Co., S-3.
8-16-16 Childs, Corby Synd., 1.
6-16-15 James, Crawford & Sebastian, 5.
1-16-17 McGrew, Estes et al, 1.
28-17-12 W. H. Murphy, Federal Pet. Co., 2.
28-15-16 Mullins, Forest Oil Co., 3.
7-16-16 McGraw, Ganzell et al, 1.
33-18-14 Clawson, Gulf Ref. Co., 1.
21-16-15 Jameson, Gulf Ref. Co., 1.
17-16-15 J. G. Murphy, Gulf Ref. Co., 3.
5-16-16 Lewis Werner, Gulf Ref. Co., 12.
35-15-17 Lewis Werner, Gulf Ref. Co., A-1
23-16-15 Clawson, Havilland et al, 1.
7-16-15 Murphy, Hodges et al, 1.
15-16-15 B. Goodwin, Humble O. & R. Co., 2.
15-16-15 Giller, Humble O. & R. Co., A-3.
15-16-15 E. G. Murphy, Humble O. & R. Co., 3.
14-16-15 E. G. Murphy, Humble O. & R. Co., 4.
7-17-14 Stevens, Mercury Oil Co., 1.
10-19-15 Rogers, Montgomery et al, 1.
33-18-15 Gates, Morefield et al, 1.
5-16-15 Flenniken, Morris Drg. Co., 1.
17-16-15 Murphy, Natl. Gas & Pet. Co., 1.
12-16-15 Houston, Natl. Gas & Pet. Co., 1.
18-17-14 Polk & Ezell, Olvey et al, 3.
23-16-15 Alphin, Fage et al, 2.
23-16-15 Holmes, Page et al, 1.
4-16-16 Saxon, Pan-American Oil Co., A-4.
15-16-15 Craig, Pure Oil Co., 3.
14-17-15 Sloan, Quaker City Pet. Co., 1.
10-16-15 L. Lawton, Sam Richardson et al, 2.
23-16-15 E. G. Murphy, Sam Richardson et al, 1.
15-17-16 Dumas, Rooker et al, 1.
15-16-15 Wells, Roxana Pet. Co., 4.
28-16-14 Long, Ray et al, 1.
8-16-15 Murphy, Sanford et al, 1.
14-16-15 Murphy, Smackover Pet. Co., 2.
11-16-15 Alphin, Standard Oil Co., 10.
5-16-16 Saxon, Standard Oil Co., B-2, B-3, C-1.
12-16-17 Rhodes, Steele Oil Co., 1.
3-16-15 Hays, Sun Oil Co., 4.
8-16-16 Childs, Tarver et al, 1.
21-16-15 Cook, The Texas Co., 2.
21-16-15 F. G. Johnson, The Texas Co., 1.
10-16-15 L. Lawton, Vaughn & Gray 3.
6-16-15 McClanahan, Vitek Oil Co., 3.
23-16-15 Goodwin, Millory et al 1.
6-18-14 Townsend, Woodley et al, 2.

Shut Down

34-17-12 Clark, Bondurant et al, 1.
3-18-12 Stegell, Bondurant et al, 1.
13-16-15 Giller, Crawford & Sebastian, 2.
25-16-16 Burton, Dickson et al, 1.
23-16-15 Goodwin, Dillon et al, 1.
7-17-14 Tufts, Donoway et al, 1.
11-19-12 Tule, Harrell et al, 1.
2-16-17 Smith, Y. E. Hildreth, 1.
15-16-16 Epps, Houston, R. C., 1.
34-16-14 Matthews, Isola Oil Trst., 1.
6-16-16 Goff, John Knox, 1.
13-16-17 Campbell, Magnolia Pet. Co., 2.
8-17-14 Moody, Magnolia Pet. Co., 5.
17-16-16 Murphy, McPherson Oil Co., 1.
5-16-15 Flenniken, Morris Drg. Co., 4.
1-16-16 Primm, Natl. Gas & Pet Co., 1.
4-16-16 C. L. Saxon, Pan-Amn. Oil Co., B-1, B-2.
30-16-15 Burton, Rica Oil Co., 1.
3-19-15 Cabiraas, Richardson et al, 1.
5-16-16 Saxon, Smitherman & McDonald, 3.
21-16-12 Little, Stark et al, 1.
16-18-13 Norman, Strong Oil Corp., 1.
10-16-15 L. Lawton, Vaughn & Gray, 2.
7-17-14 Lyon, Vag Oil Co., 1.
6-16-16 Holloway, Weatherbee et al, 1.
6-18-14 Beam, T. J. Woodley, 1.
Rigs, 35; wells drilling, 82; total. 117.

SMACKOVER DISTRICT
OUACHITA COUNTY

Rigs

30-15-17 Smith, American Trust Co., 1.
34-15-15 Snyder, Ark. Nat. Gas Co., 4.
19-15-16 Cade, Bailey et al, 1.
4-12-18 Doc Bradford, Block O. & G. Co., 1.
25-15-17 Lagrone, Burch-Walker, 3.
28-15-19 Hughes, Burton Trst., 6.
29-15-16 Minor, Forest Oil Co., 2.
25-15-17 Ward, Hale et al, 2.
25-15-17 Smith, Harris et al, 1.
31-15-16 Patton, Houston Oil Co., 2.
34-15-15 Ferris, Humble O. & R. Co., 1.
30-15-16 Solmson, Hunt et al, 3.
30-15-16 Shirey, Lanier et al, 2.
25-15-16 Cunningham, Newton et al, 2.
30-15-16 Myar Est., Smith Ref. Co., 3.
31-15-16 Patton, Smith Refg. Co., 4.
29-15-16 Taylor, Snowden & McSweeney, 2.
32-15-15 Umstead, Standard Oil Co., 5, 11.
31-15-16 Patton, Sun Oil Co., 3.
30-15-16 Fee, Sure Oil Co., 3.
34-15-15 Joyce, Sure Oil Co., 2.
30-15-16 Chandler, The Texas Co., 1, 2.
29-15-16 Solmson, The Texas Co., A-3.
32-15-16 Patton, V. K. F. Drg. Co., 4.
29-15-16 Berg, Whittiken et al, 2.

Wells Drilling

25-15-17 Lagrons, Burch-Walker, 4.
30-15-16 Shirey, El Dorado Union Oil Co., 2.
36-15-17 Smith, El Dorado Union Oil Co., 2.
22-15-16 C. L. Cramer, Forest Oil Co., 6.
28-15-16 Hardin, Forest Oil Co., 4.
27-15-16 Mullins, Forest Oil Co., 11.
30-15-16 Watts, Giles et al, 3.
28-15-16 Fincher, Gulf Ref. Co., 4.
19-15-16 Meek, Gulf Refg. Co., 1.
32-15-16 Patton, Gulf Refg. Co., 2.
31-15-16 W. E. Patton, Gulf Refg. Co., 1.
29-15-16 Solmson, Gulf Ref. Co., 2.
31-15-16 Patton, E. K. Hamilton, 1.
28-15-16 Hardin, Invaders Oil Co., 3.
21-15-16 Hughes, Johnson et al, 1.
29-15-16 McElroy, Johnson et al, 1.
32-15-16 Myer Est., Keene & Woolf, 3.
26-15-17 Peace, Klotz & Thomas, 1.
24-15-17 Berry, Lewis & Clarke, 4.
32-15-16 Patton, Magnolia Pet. Co., 2, 3.
31-15-16 Smith, Magnolia Pet. Co., 3.
29-15-16 McElroy, Majestic Smackover Oil Co., 2.
26-15-16 McKenzie, Oilfield Corp. 2.
5-16-15 Umstead, Olvey et al, 1.
27-15-16 Mullins, Peer Oil Co., 1.
27-15-16 Hardin, Penguin Oil Co., 2.
21-11-17 Moline Timber Co., Pure Oil Co., 1.
10-11-16 Henry, Riley et al, 1.
31-15-15 Laney, Roxana Pet. Co., 1.
28-15-15 Hildebrand, Simms Oil Co., 4.
32-15-16 Reynolds, Simms Oil Co., 4.
30-15-16 Fee, Smith Refg. Co., 1.
31-15-16 Patton, Smith Refg. Co., 3, 4.
30-15-16 Fee, Solmson et al, 2.
23-15-16 Solmson, Standard Oil Co., 3.
30-15-16 Fee, Sure Oil Co., 2.
31-15-15 B. T. Laney, Sure Oil Co., 2.
17-15-16 Turbenville, Tenn. O. & G. Co., 1.
32-15-16 Solmson, The Texas Co., B-1.
32-15-16 Patten, V. K. F. Drg. Co., 3.
32-15-16 Fincher, Wingfield et al, 1.
32-15-16 Patton, Woodley Pet. Co., 2.

Shut Down

30-13-18 Smith, Berry et al 1.
25-16-16 Robertson, Bradstreet et al, 2.
20-14-16 Halford, Bray-Hawthorne, 1.
30-15-17 Ferris Burton, Jimmie Cox 1, 2.
27-15-16 Hicks, El Dorado Gas Co., 1.
22-15-17 Riley, Hammon et al, 1.
5-16-15 Hill, Invaders Oil Co., 1.
31-13-16 Hargais, Marr Drg. Co., 1.
19-15-16 Bryant, Frank Masters, 1.
36-15-16 Horton, Metric Oil Co., 2.
27-15-16 Mullins, Morris Drg. Co., 2.
25-12-16 Eagle Mills Co., Walter Fafer, 1.
29-15-16 Shirley-Berg, Bob Simmons, 1.
32-15-17 Moon, Smackover Creek Oil Co., 1.
8-14-12 Graves, Smackover Pet. Co., 1.
1-16-15 McDonald, Thompson et al, 3.
5-16-15 Goodwin, Wilson Pet. Co., 1.
2-12-18 Garnett, Woods et al, 1.
Rigs, 13; wells drilling, 63; total, 76.

STEPHENS FIELD
OUACHITA COUNTY

Rigs

19-15-19 Burris, North Cent. Texas Oil Co., 2.
30-15-19 Weaver, Standard Oil Co., 6.

Shut Down

30-15-19 Webfer, Atlantic Oil Prod. Co., 4.
33-14-19 Allen, Hopkins Trst., 1.
23-15-19 Wesson, Leeper Trst., 1.
Rigs, 2; wells drilling, 3; total, 5.

COLUMBIA COUNTY

Rigs

23-14-20 Jackson, Ark-Osage Oil Corp. 1.
14-15-20 Murphy, Atlantic O. P. Co., 1.
24-15-20 Milner Church, Hoffman & Delney, 1.
18-17-22 Sailes, Johnson et al, 1.
13-15-20 Adkins, S-2.

Wells Drilling

24-15-20 Milner, Atlantic O. P. Co., 4.
13-15-20 Smart, Hickman et al, 2.
24-15-20 Buffington, Hoffman, Pete, 1, 2.
25-15-20 Hammond, Magnolia Pet. Co., 4.
24-15-20 Milner, Turley & Tate, 4.
23-15-20 Milner, Wingfield et al, 4.

Shut Down

23-18-20 Robinson, Brown et al, 1.
12-18-21 Davis, Guy Cox, 1.
14-18-20 Russ, Jimmie Cox, 1.
3-16-21 Fullenweider, De Soto Hickman, 1.
12-17-22 Ray-Fullenweider, Dowby et al, 1.
30-19-18 Haynes, Hosey McDonald, 1.
20-16-18 Watts, Miller et al, 1.
35-18-19 Duffer, Smith & Compton, 1.
Rigs, 5; wells drilling, 15; total, 20.

BELLEVUE FIELD
BOSSIER PARISH

Rigs

15-19-11 Scandland, R. O. Roy, 25.
10-19-11 B. & W., Humble O. & R. Co., 4-6
23-19-11 Strange, Olmstead et al, A-13.
15-19-11 B. & W., Bliss & Weatherbee, A-9.

Wells Drilling

15-19-11 B. & W., Bliss & Weatherbee, A-9.
10-19-11 Elston, National Oil Co., 13.
15-19-11 Scandland, R. O. Roy, 23, 26, 27.
10-19-11 B. & W., Standard of La., 4, 8.
27-19-11 Catlett, Webb et al, 2.

Shut Down

15-19-11 R. B. & W., Humble O. & R. Co., 18.
27-19-11 Catlett, Pope et al, 1.
Rigs, 4; wells drilling, 10; total, 14.

CADDO PARISH

Rigs

14-21-15 Robertshaw, Dixie Oil Co., 31.
33-23-16 Brewer, La. Pet. Co., Inc., 1.
30-19-15 Nickerson, Matson et al, 1.

Wells Drilling

15-18-16 Sharp, Brewer & Sewell, 1.
27-16-14 Alex. & Ledbetter, Crude Oil Co., 1.
14-21-15 Robertshaw, Fortuna Oil Co., 11.
24-20-15 Youree Randolph, Humble O. & R. Co., 1.
31-21-15 Brown Fee, Muslow Oil Co., 1.

Shut Down

23-21-15 Hanzen O. Co., Glassell et al, 1.
11-16-14 Mitchell, Mitchell Oil Co., 1.
34-23-15 Robinson, Myra Oil Co., 1.
12-21-15 Lynn, Old Settlers Oil Co., 5.
3-20-15 Green, St. Louis Caddo Oil Co., 1.
Rigs, 3; wells drilling, 10; total, 13.

CLAIBORNE PARISH

Rigs

22-19- 5 Fields, Forest Oil Co., 1.
23-23- 8 Sherman, Ohio Oil Co., 15.

Shut Down

15-23- 4 Brinkley, Price Harrell, 1.
12-23- 4 Cooper, Mitchell et al, 1.
17-22- 5 Rainbach, Traingle Drg. Co., 1.
Rigs, 2; wells drilling, 3; total, 5.

RED RIVER
Wells Drilling

7-14-10 Welch, Caldwell et al, 1.
24-12-11 Armistead, Fortuna Oil Co., 15.

Shut Down

13-12-10 Marston, Coushatta Synd., 1.
Rigs, 0; wells drilling, 3; total, 3.

DE SOTO
Wells Drilling

8-11-15 Frost Johnson, Uiray et al, 1.

LOUISIANA WILDCATS

Rigs

34-18- 7 Durett, Smith et al, 1.
6-18- 5 Harrell, Smith et al, 1.
21-14-4e Fee, Culver et al, 1.
12-18-12 Freeman, Hoover et al, 1.
12-16-12 Caplis, Palmer & Davidson, 1.
21-11-2e Urania, Helm & Burch, 1.
35-20-2w Colvin, Helm & Egger, 1.
18-20- 5 Fee, Magnolia Carbon Co., 1.
18-22-1e Templeton, Lide et al, 1.
15-20-1w Dubach Lumber Co., Cole Oil Co. 1.

15-21-1g Hodges, Snyder et al, 2.
17-21- 9 Pruitt, Fortuna Oil Co., 1.

Wells Drilling

19-16- 6 Bodcaw Lbr. Co., Ohio Oil Co., 1.
23-22-11 Bolinger, Ohio Field Gas Co., 1.
18-19-13 Vance, Perkins et al, 2.
22-17-12 Fee, Skannell et al, 1.
8-20-3w McKay, Middle Fork Synd. 1.
20-20-5e Irvin, Carson Carbon Co., 1.
21-20- 5 Fee, Ladell et al, 16.
15-20- 5 Rogers, Morris Trst., 1.
3-19-5e West Va. Tbr. Co., 2.
23-20- 4 Cole, Fortuna Oil Co., 1.
14-17- 3 Dixie Lbr. Co., Haynes et al, 2.
21-19- 5 Collins, Hosterman et al, 1.
19-20- 5 Fee, Ladell et al, 17, 18.
28-19- 5 Fee, Peerless Carbon Co., 2.
27-19- 5 Fee, Southern Carbon Co., 25.
43-20- 5 Fairbanks, Southern Carbon Co., 6.
4-19- 5 Fee, Tex-Lt. Prod. Co., 3.
29-19- 5 Gibbs, The Texas Co., 3, 4.
12-19- 4 Kerr, United O. & G. P. Co., 1.
4-18- 5 West Va., West Va. O. & G. Co. 2.
19-23-1e Green Davidson & Palmer, 1.
26-19-1e Hamilton, Empire G. & F. Co., 1.
17-23-1e Clark, Union Parish Drg. Co., 3.
29-21-4e Union Saw Mill, Union Power Co., A-5.
32-21-4e Union Saw Mill, Union Power Co., A-6.
21-21-4e Union Saw Mill, Union Power Co., A-7, A-8.
17-23-2e Clarks, Woodward & Clarke, 1.
26-21- 9 Doles, O'Brien et al 1.
34-23-10 Martin, Ohio Oil Co., 1.
26-21- 9 Hope Est., Oil Fields Gas Co., 1.
6-18-19 Anders, Palmer & Blunt, 1.

Shut Down

21-15- 5 Hodge, Hodge Hunt Lbr. Co., 3.
3-22-12 Bolinger, Atlas Drg. Co., 1.
14-16-12 Simpson, Davis & Burch, 3.
18-19-13 Vance, Perkins et al, 2.
23-18-11 Jones, Sneed et al, 1.
15-22-14 Bolinger, Tarver Bros. Pet. Co., 1.
4-18-11 McGuffin, Zinc et al, 1.
20-16-2e Urania, Urania Pet. Co., 2.
17-20-5w Colvin, Four Creek Oil Co., 1.
29-20-5e Oden, Consolidated Oil Co., 1.
26-20- 5 Perry, McKenzie et al, 1.
17-20- 5 Spyker, Southern Carbon Co., 11.
7-20- 5 Michim, Zeigen et al, 1.
7- 7-12 Bowman Hicks, Brown et al, 1, 7.
6-23-3w Brown, Gardner et al, 2.
23-23-2w Rogers, Price et al, 1.
29-21-10 Miller, Palmer Corp., 1.
Rigs, 12; wells drilling, 52; total, 64.

ARKANSAS WILDCATS

Rigs

31- 7-20 Wright, Rushville Trst., 1.
8- 9-20 Clark, Vitek Oil Co., 1.
13- 8-12 Clark, Clark & Melatt, 1.
22- 7-12 Taylor, Clark & Melatt, 1.
9-11-26 Haffke, Columbus-Hope Oil Co., 1.
21-19-23 Hughes, Wilburn et al, L. K., 1.
23-14-28 Gillespie, Munn O. & G. Co., 1.
15-14-21 Blake, Ames et al, 1.
24-10-23 McCain, Arkado Oil Co., 1.

Wells Drilling

16-12- 7 Wilson, Monticello Ridge Oil Co., 1.
27-12- 8 Martin, W. H. Rhodes et al 1.
24-11-25 King, Columbus-Hope Oil Co., 2.
17-11-25 Nichols, Myers et al, 1.
17-12-23 Yates, Orr et al, 1.
36-12-27 Adams, G. W. Simomns Trst., 1.
15-13-29 Goodwin Tbr. Co., Gaines et al, 1.
10-11-21 Hawkins, Johnson et al, 1.
8-14-27 Adams, Cochran & Ray, 1.
33-14-28 Thompson, Kingley et al, 1.
3-14-21 Waters, Owens et al, 1.
10-14-21 Womack, Smitherman & McDonald, 1.
11-14-21 Wallace, Smitherman & McDonald, 1.
16-14-21 Butcher, Steele & Sandlin, 1.
13-14-22 Martin, Steele & Sandlin, 1.
14-13-20 Blakely, Transcontinental, 1.
9-13-20 Moore & Martin, Wooten et al, 1.

Shut Down

16-11-13 Hearnsberger, Calhoun O. & G. Co., 1.
26-16-23 Freeman Smith Lbr. Co., Harris & Bickle, 1.
29-12-12 Adams, Vitek Oil Co., 1.
15- 8 22 Wilson, American Drg. Co., 1.
26-10-20 Barringer, Ark. Oil Co. 1.
35- 9-18 Grayson & McLead, Dudley et al, 1.
28- 5-23 Langaford, United Pet. Corp., 1.
15-11-11 Word, Stark & O'Mara, 1.
33- 8-15 Matlock & Higgs, Conway et al, 1.
5-10-16 Taylor, Stahl et al, 1.
22-11- 7 Graves, Monticello Ridge Oil Co., 1.
23-12- 6 Fee, Stenke et al, 1.
15- 5 12 Stupke, Farr 2.
31- 4-11 Britch, Parr Oil Co., 1.
33-11-26 Ellen, Hackathorne et al, 1.
34-13-24 Red River Land & Dev. Co., Kensay Pet. Co., 1.
16-15-24 Osborne, Lewisville Synd., 1.
25-17-24 Renick, Wilcox et al, 1.
2-13-21 Allen, Grote et al, 1.
29-13-26 Toland Taylor, Red River Valley, 1.
32-11-22 Ludlow, Sullivan O. & G. Co. 2.
22-15-25 Mann Ld. & Dev. Co., 1.
12-15-22 C. D. Perry, Burnham et al, 1.
31-13-21 Berley, Carter et al, 1.
11-12-23 Eaves, Edwards & Anderson, 1.
16-12-20 Henry, Prescott Oil Co., 1.
13-12-22 East, Wilson Oglesby et al, 1.
1-10-23 Suckle, Wiesman et al, 1.
Rigs, 8; wells drilling, 45; total, 53.

GULF COAST

Summary of Field Operations

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Batson	....	0	1	0	1	2	3
Blue Ridge	1	60	0	0	0	2	2
Big Creek	.. 2	0	2	0	0	4	4
Damon Md.	2	700	1	0	0	3	3
Goose Creek	4	800	2	0	2	9	11
Humble	 3	40	0	0	0	9	9
Hull	 5	1,400	1	0	4	17	21
Jennings	... 1	50	0	0	0	0	0
Markham	 0	0	0	0	0	3	3
Orange	 2	125	0	0	7	19	26
Pierce Jct..	2	1,000	1	0	0	2	2
Spindletop	. 1	15	0	0	0	1	1
Saratoga	... 0	0	0	0	0	2	2
Sour Lake	.. 1	70	0	0	0	3	3
Somerset	 0	0	0	0	0	6	6
Vinton	 5	330	2	0	1	5	6
W. Columbia	1	0	0	0	0	2	2
Luling	 6	2,800	2	0	6	21	27
Laredo Dist.	6	475	1	1	4	11	15
Milam Co...	5	50	1	1	1	9	10
Miscl.	 7	60	5	0	51	149	200
Total Dec.	55	7,975	19	2	77	279	356
Total Nov.	90	26,057	16	4	84	278	362
Difference	35	18,082	3	2	7	1	6

WELLS COMPLETED

BATSON

Parafine, Ada Bell Oil, 64 ..... sw

Wells completed and salt water.. 1

BLUE RIDGE

Booth, Mutual Oil 1 (wo) 60

Wells completed 1
Production 60

BIG CREEK

Ahlers, Rich et al 1 ..... sw
Davis, Gulf Prod. 7 ..... dry

Wells completed and abd..... 2

DAMON MOUND

Jackson, Sinclair Oil & Gas 20..... 700
Smith, Humble Oil & Ref. 1 ..... sw

Wells completed 2
Production 700
Salt water 1

GOOSE CREEK

Galliard, Gulf Coast, Crown 38 100
Chapman-Bryan, Gulf Prod. 6 700
Galliard, Humble Oil & Ref. 26..... sw
Spillman, J. R. Copeland 1 ..... sw

Wells completed 4
Production 800
Abd. and sw 2

HUMBLE

Lee, Newman Drg. Co. 1 20
Landslide, Burley Oil 30 10
Hermann, Martin Oil 9 (wo)..... 10

Wells completed 3
Production 40

HULL

Dolbear, Republic Prod. 72 400
Dolbear, Republic Prod. 73 800
Phoenix, Gulf Prod. 10 (wo) 200
Taylor, Yount-Lee Oil 3 80
Mecom, Mecom Oil 3 (dpnd) ..... sw

Wells completed 5
Production 1400
Salt Water 1

JENNINGS

Latrielle, The Texas Co. 26 50

Wells completed 1
Production 50

ORANGE

Hager, Atlantic Oil Prod. 2 (wo)..... 50
Chesson, Orange Pet. 4 (wo)..... 75

Wells completed 3
Production 125

PIERCE JUNCTION

Fitzsimmons, Humble Oil & Ref. 6....1000
Settegast, The Texas Co. 1 ..... abd

Wells completed 2
Production 1000
Abandoned 1

SPINDLETOP

McFadden, Wilson-Broach Co., 3 15

Wells completed 1
Production 15

SOUR LAKE

Fee, The Texas Co., 262 (wo)..... 70

Wells completed 1
Production 70

VINTON

Star, Gulf Ref. 30 ..... sw
Vincent, The Texas Co. 3 (wo) 10
Gray, Marrs McLean 5 ..... sw
Vincent, Gulf Coast Oil 5 20
Vincent, Edgerly Pet. 1 300

Wells completed 6
Production 330
Salt water 2

WEST COLUMBIA

Robertson, the Sun Co. 2 (wo)..... abd

Wells completed 1
Abandoned 1

LULING

Shanklin, United North and South Oil 1 abd
McKean, Yoakum-Shriner Oil 1 800
Merriweather, United North & South Oil 1 700
Fee, M. O. Raylor 1 ..... abd
Fields, Mahstead-Mook Oil 1 800
Rios, United North and South Oil 8.. 500

Wells completed 6
Production 2800
Abandoned 2

LAREDO

Schott, Schott Oil 20 125
Garcia, Neuva Oil 1 75
——, Aztec Oil 3 100
Fee, Allsworth Oil 1 100
Schott, Magnolia Pet. 17 75
Barnsley, Caroline-Texas Oil 5 ..... gas

Wells completed 6
Production 475
Gas 1

MILAM COUNTY, SHALLOW SAND DISTRICT

Latham, Wissenger et al 1 ..... abd
Baldridge, Noake Oil 3 15
Phillips, Texas Pet. Dev. 1 20
Van Goten, Plunkett Oil 2 15
Fee, J. W. Lee Oil 1 ..... gas

Wells completed 5
Production 50
Gas 1
Abandoned 1

MISCELLANEOUS

Culbertson County—

Jones, T. W. Owens 2 ..... abd
Gossert, Gossert et al 1 ..... abd

Galveston County—

High Island, Great Western Oil 1 (dpnd) 10

Liberty County—

Peeler, Quick Dev. 1 ..... abd

Medina County—

Durst, Ina Oil 2 50
——, Wolfe Oil 1 ..... wtr

Washington County—

Prembsky, The Texas Co. 1 ..... dry

Wells completed 7
Production 60
Abandoned and water 5

BATSON

Rigs

Hooks, the Sun Co. 1.

Wells Drilling

Hooks, Deutser Oil 1.
Hodges, Kirby Pet. 2 sd.
Rigs, 1; drilling and shut down, 2; total,3.

BIG CREEK

Wells Drilling

Ahlers, Rich et al 1 (dpng).
Davis, Gulf Prod. 9.
Wheat, Gulf Prod. 7, 8, sd.
Wells drilling and shut down, 4.

BLUE RIDGE

Wells Drilling

Robinson, The Texas Co. 11.
Weems, Mutual Oil 1.
Wells drilling, 2.

DAMON MOUND

Wells Drilling

Becker, Sinclair Oil & Gas 8.
Jackson, Sinclair Oil & Gas 20 (wo).
Ward, Cullen et al 3.
Wells drilling, 3.

GOOSE CREEK

Rigs

Hogg Island, Humble Oil & Ref. 1.
H. Galliard, Gulf Prod. 3 (wo).

Wells Drilling

Smith, Humble Oil & Ref. 53.
Peninsula, Humble Oil & Ref. 26 (dpng).
Tabb, Humble Oil & Ref. 10.
Gilliard, Gulf Coast, Crown Joint 31 (wo).
Gillette, Gilcrest & Newton 4 (wo).
Chapman-Bryan, Gulf Prod. 6 (dpng).
Hirsch, Guif Prod. 2.
Paddock, Gulf Prod. 8.
Beaumont, Gulf Prod. 28.
Rigs, 2; wells drilling, 9; total, 11.

HUMBLE

Wells Drilling

Bender, Sun Co. 1 sd.
Slaughter, Callihan Oil 1, 2.
——, Coastal Oil Fields 1 sd.
Hermann, Martin Oil 7, 8 (wo).
Rosenthal, Thayer Bros. 1 sd.
Landslide, Burley Oil 26, 31.
Wells drilling, 9.

HULL

Rigs

Phoenix, Gulf Prod. 9 (wo).
Thomas, Gulf Prod. 4 (wo).
Dolbear, Republic Prod. 74.
Taylor, Yount-Lee Oil 5.

Wells Drilling

Dolbear, Republic Prod. 26, 43 (wo), 75, 76.
Carr, Sun Co. 9.
Miller, Monarch Oil & Ref. 2, 3.
Hannah, Texas and Vacuum Cos. 1 (dpng).
Merchant, Yount-Lee Oil 8.
Taylor, Yount-Lee Oil 4.
Lynd, Empire Gas & Fuel 4.
Harrison, Gulf Prod. 5-A.
Hannah, Gulf Prod. 12.
Taylor, Humble Oil & Ref. 2.
Sterling, Humble Oil & Ref. 1.
Taylor, Houston Prod. 7.
Rivere, Link Oil 4 (dpng).
Rigs, 4; wells drilling, 17; total, 21.

MARKHAM

Wells Drilling

Myers, Rycade Oil 1.
Hudson, Rycade Oil 2.
Newman, Schulte 1.
Wells drilling, 3.

ORANGE

Rigs

State land, Rycade Oil 1, 2-D.
Brown, Sun Co. 2, 3.
Brown, Brownie Babbittee Oil 1.
Winifred, Gulf Prod. 8.
Hammon, Gulf Prod. 1.

Wells Drilling

Winifree, Amn. Natl. Oil 1.
State land, Rycade Oil 3-A.
Chesson, Mutual Oil 6, 8 (wo).
Berwick, Orange Pet. 3 (wo).
Chesson, Orange Pet. 5.
Kato, the Sun Co. 1.
Jackson, Supreme Oil 1 (dpng).
McLain, Brownie Babbittee Oil 6 (wo).
Chesson, Humble Oil & Ref. 18, 20.
Winifree, Humble Oil & Ref. 8.
Granger, Sinclair Oil & Gas 6.
Hager, Gulf Prod. 13, 14.
Kishi-Lang, Gulf Prod. 6-A.
Pevitio, Gulf Prod. 3 dpng, 5.
Winifree, Gulf Prod. 1-A.
Rigs, 7; wells drilling, 19; total, 26.

PIERCE JUNCTION

Wells Drilling

Ritter, the Sun Co. 1.
Whitehead, Humble Oil & Ref. 2 (wo).
Wells drilling, 2.

SPINDLETOP

Wells Drilling

McFadden, Rycade Oil 2.
Wells drilling, 1.

SARATOGA

Wells Drilling

Louis, Paggi Bros. Oil 3.
B. Rio Bravo Oil 83.
Wells drilling, 2.

SOUR LAKE

Fee, The Texas Co. 268 (wo).
Cannon, W. Quinn 1 sd.
Fee, Gilbert Oil 86 sd.
Wells drilling, 3.

SOMERSET

Wells Drilling

Fuiler, Witherspoon Oil 9 sd.
Kurz, Somerset Oil 20.
Foster, Frontier Oil 1.
McKinney, J. Harvey 2.
Langely, Witherspoon Oil 1.
Cohen, Natl. Oil Co. 3.
Wells drilling, 6.

VINTON

Rigs

Vincent, Edgerly Pet. 2.

Wells Drilling

Tillery, Edgerly Pet. 1.
Star, Gulf Ref. 30 (dpng).
Green, Siess Synd. 8.
Lyons, Just Oil & Ref. 2.
Gray, The Texas Co. 23.
Rigs, 1; wells drilling, 5; total, 6.

WEST COLUMBIA

Wells Drilling

Hogg, The Texas Co. 53 (wo).
Abrams, The Texas Co. 3 (wo).
Wells drilling, 2.

LULING

Rigs

Tabor, M. O. Rayor 2.
Herscahp, Universal Oil 1.
Hardeman, United North and South Oil 5.
Purcell, C. W. Patton 1.
Merriweather, Witherspoon Oil 1.
Martin, Tindley and Killough 1.

Wells Drilling

Guadalupe County, Lopez, United North and South Oil 1.
Guadalupe County, Engelke, United North and South Oil 1.
Guadalupe County, Manford, United North and South Oil 1.
C. Byrd, United North and South Oil 3.
Marion Mercer, United North and South Oil 1 sd.
Gibson, United North and South Oil 1 sd.
Dunlap, Armstrong et al 1.
Moore, Jarmon Oil 2.
Moore, United North and South Oil 1.
Merriweather, Magnolia Pet. 6.
C. Byrd, Magnolia Pet. 2 sd.
Sherrill, Magnolia Pet. 1.
Garcia, Royal Oil 1.
Cole, Thornton-Blackstone Co. 1.
Davis, Texas Trading Co. 1.
Proctor, Seals Creek Oil 1 sd.
Hardeman, Sunland Oil 2 sd.
Merriweather, Yoakum-Shriner Oil 1.
Merriweather, Prairie Lea Oil 2.
Walker, Big Gusher Oil 1 sd.
Henry, C. C. Cannan 1 sd.
Rigs, 6; wells drilling, 21; total, 27.

LAREDO DISTRICTS

Rigs

Schott, Killiam et al 1.
Oilton, Duggan et al 2.
Puigg, Clark & Howell 1.
Gonzales, Bailey et al 1.

Wells Drilling

——, Morgan Gibble 1.
Shasta, Shasta Oil 3.
Garcia, Neuva Oil 2.
Fee, Allsworth Bros. 2.
——, Magnolia Pet. 21.
——Magnolia Pet. 3 dpng.
Harvey, Barnhart Drg. Co. 1 sd.
Garcia, Schott Oil 22.
Schott, Carnahan Oil 56 sd.
Gates, Leaseholders P. & R. 6, 7 sd.
Rigs, 4; wells drilling, 11; total, 15.

MILAM COUNTY SHALLOW SANDS

Rigs

Branch, W. C. Jennings 2.

Wells Drilling

Timmerman, Gutherie et al 2.
Buer, Beverly Oil 1.
Branch, W. C. Jennings 1.
Aterisky, Freddie Palmer Oil 2.
Rockdale, Fritz Fuchs 1.
Batte, Texas Pet. 8.
Bremond, Twin City Oil 1.
Ashley, Tuttles et al 1.
Rittig, Bartlett-Minerva Oil 1 sd.
Rigs, 1; wells drilling, 9; total, 10.

WYOMING FIELDS

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Big Muddy .	1	105	0	0	0	8	8
Salt Creek ..	35	9,718	2	0	46	90	136
Lance Creek	1	0	1	0	0	7	7
Warm Spgs.	2	0	1	1	5	22	27
Big Horn Basin	2	10	sd	0	4	21	25
Lost Soldier District ..	3	0	2	1	9	50	59
Rock River District ..	3	375	0	0	1	17	18
Fremont Co.	0	0	0	0	4	29	33
Mule Creek .	0	0	0	0	0	3	3
Osage	1	50	0	0	8	8	16
Natrona Co.	2	0	0	2	1	19	20
Lincoln and Uintah Cos	0	0	0	0	4	17	21
Baxter Basin	0	0	0	0	2	13	15
Miscl.	1	0	1	0	7	42	49
Total Dec.	51	10,258	8	4	91	345	436
Total Nov.	43	14,669	4	3	94	389	483
Difference	8	4,411	4	1	3	44	47

Gas production, 36,000,000.

MONTANA

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Cat Creek ..	3	0	2	0	2	21	23
Kevin Sunburst .	12	595	1	1	14	36	50
Miscellaneous	3	0	3	0	5	106	111
Total Dec.	17	595	6	1	21	163	184
Total Nov.	22	1,095	6	0	20	168	188
Difference	5	500	0	1	1	5	4

Gas production, 3,000,000.

UTAH

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
December ..	0	0	0	0	1	24	25
November ..	0	0	0	0	0	24	24
Difference	0	0	0	0	1	0	1

BIG MUDDY

Wells Drilling

8-33-76 Humphreys, Mutual Oil 38.

Shut Down

2-33-76 Fenex, Mutual Oil 4.
15-33-76 Whiteside, Mutual Oil 37.
8-33-76 Humphreys, Mutual Oil 37.
8-33-76 Crary, Texas Prod. 32.
4-33-77 Big Bear Oil.
23-33-76 Northstar Oil.
36-33-76 Pathfinder Oil.
Wells drilling, 8.

SALT CREEK

Rigs

31-40-78 NE¼, Salt Creek Cons. 16-A, 28-A.
34-39-78 Mammoth Oil 205.
7-39-78 NW¼, Salt Creek Cons. 2-A.
1-39-79 Dain, Ohio Oil 5, 6.
12-39-79 E½, Ohio Oil 18.
33-39-78 SE¼, Mammoth Oil 405.
28-39-78 SE¼, Mammoth Oil 406.
5-39-78 SE¼, Western States O. and L. 21-A.
13-39-79 SE¼, Bessemer Oil 2-AX.
34-39-78 SW¼, Mammoth Oil 302.
13-39-79 SE¼, Blackstone Salt Creek F-4.
11-39-79 NE¼, Kasoming Oil B-4, B-6, B-7, B-11.
17-39-78 SE¼, Marine Oil 2, 6.
2-39-79 SE¼, Sinclair Wyoming 7-A.
10-40-79 SE¼, Empire State 25-A.
7-39-78 SW¼, Salt Creek Cons. 18-A.
2-39-79 SW¼, Mutual Oil 12-A.
1-39-79 SE¼, Northwestern Oil 6-A.
2-39-79 SW¼, Northwestern Oil 1-AX.
8-39-78 SE¼, Outwest Pet. 6-A, 34-A.
11-39-79 SW¼, E. T. Williams 2-A.
22-40-79 SW¼, Wyokans Synd. 4.
19-40-78 SE¼, Norris Oil 18-A.
5-39-78 NW¼, Western States O. and L. 4-A.
7-39-78 SE¼, Chappell Oil 3.
8-39-78 NE¼, Eureka Wyoming 2.
13-38-78 SW¼, Wyoming Teapot Oil 1.
16-38-78 NE¼, Nicholaysen et al.
12-39-79 Castle Rock, Ohio Oil 5.
5-39-78 SE¼, Western States O. and L. 33-A.
31-40-78 NE¼, Salt Creek Cons. 22-A.
28-39-78 NW¼, Mammoth Oil 204.
6-39-78 SW¼, Prod. and Ref. C-5.
8-39-78 SW¼, Western States O. and L. 21-A.
32-40-78 NW¼, Continental Prod. B-9.
34-40-79 NW¼, Wyoming Asso. 24-AX.
6-39-78 NE¼, Mountain & Gulf 27-A.
10-39-78 NW¼, Mammoth Oil 202.
19-40-78 SE¼, Continental Prod. 4.

Wells Drilling

8-39-78 NE¼, Marine Oil DS-2.
9-39-78 SW¼, Marine Oil DS-3.
32-40-78 NW¼, Continental Prod. B-7, B-8.
13-39-79 SW¼, Continental Prod. H-2.
17-39-78 NE¼, Carter Oil F-8.
19-39-78 SW¼, Mosher Synd. 3-S.
2-39-79 SW¼, Mutual Oil 2-A.
2-39-79 NW¼, Midwest Oil 15-A.
2-39-79 NW¼, Midwest Oil 23-AX.
36-40-79 NE¼, Midwest-Wyo. Asso. 13-AX.
25-40-79 NE¼, Midwest Wyo. Asso. 23-A.
36-40-79 NE¼, Wyoming Asso. 18-A.
27-39-78 SW¼, Mammoth Oil 302.
10-38-78 NE¼, Mammoth Oil 101.
1-39-79 Dain 9, Ohio Oil 12.
22-40-79 NW¼, Kasoming Oil G2S.
15-40-79 SE¼, Prod. and Ref. 8X.
29-40-78 SW¼, Continental Prod. S-3.
28-40-79 SE¼, J. C. Smith S-1.
27-40-79 NE¼, Wyo. Asso. 5-A.
11-39-79 NW¼, Salt Creek Cons. 8-A.
22-40-79 NE¼, Midwest Oil 12-A, 7-A.
21-39-78 SW¼, Mammoth Oil 304.
28-39-78 NE¼, Mammoth Oil 405.
27-39-78 SW¼, Mammoth Oil 303.
33-39-78 NW¼, Mammoth Oil 201.
7-39-78 NW¼, Kasoming Oil E-9.
22-40-79 SW¼, Wyokans Synd. 5.
7-39-78 SE¼, Chappell Oil 1-DD.
8-39-78 NE¼, Carter Oil H-1.
24-39-79 NE¼, Kinney Coastal 16-A.
10-40-79 SE¼, Empire State 26-AX.
2-39-79 SW¼, Salt Creek Cons. 22-AX.
3-39-79 NE¼, Salt Creek Cons. 30-A.
6-39-78 NW¼, Blackstone Salt Creek 3-A.
13-39-79 NW¼, Kasoming Oil D-6.
15-40-79 Prod. and Ref. 7.
3-39-79 NW¼, Salt Creek Cons. 25-A.
11-40-79 NW¼, Mountain & Gulf 26-A.
17-39-78 Tract G, Ohio Oil 1.
20-39-78 Tract ET, Ohio Oil 4.
18-40-78 SW¼, Continental Prod. 1-W.
22-40-79 NW¼, Kasoming Oil G-14.
18-40-78 SE¼, Prod. and Ref. 2.
20-39-78 NW¼, Prod. and Ref. BY-9.
19-39-78 NW¼, Continental Prod. R-3.
15-40-79 SE¼, Wyoming Asso. 22-A.
3-39-79 SE¼, Salt Creek Cons. 26-A.
31-40-78 NE¼, Salt Creek Cons. 31-A.
13-40-79 NE¼, Mountain & Gulf 12-A.
35-40-79 NE¼, Midwest Oil 26-A.
34-40-79 NW¼, Midwest Oil 13-A.
11-40-79 SW¼, Midwest Oil 30-A.
35-40-79 SW¼, Mutual Oil 24-A.
7-40-78 NE¼, Pacific Oil 4-A.
28-39-78 NE¼, Mammoth Oil 101.
28-39-78 SW¼, Mammoth Oil 302.
29-39-78 NE¼, Mammoth Oil 108.
28-39-78 NW¼, Mammoth Oil 202, 205, 203.
33-39-78 SE¼, Mammoth Oil 402.
10-39-79 NE¼, Bessemer Oil 7-A.
22-40-79 SE¼, Wyoming Oil Fields 7-A.
22-40-79 NE¼, Wyoming Oil Fields 5-A.
34-40-79 NE¼, Wyoming Asso. 18-A.
34-40-79 NE¼, Wyoming Asso. 19-AX.
15-40-79 NE¼, Wyoming Asso. 26-A.
22-40-79 SE¼, Wyoming Asso. 32-A.
3-39-79 SE¼, Salt Creek Cons. 34-A.
11-40-79 SE¼, Midwest Oil 6-A.
4-38-78 NE¼, Mammoth Oil 101.

Shut Down

23-39-79 SE¼, Evans Oil Corp.
3-39-79 NW¼, Duthie Oil 4, 5.
22-40-79 NW¼, E. T. Williams 23-A.
34-40-79 SW¼, Boston Wyoming 35-A.
29-40-78 NW¼, Omaha Lusk Oil 1.
28-40-78 SW¼, Jupiter Oil 27-A.
25-40-79 SE¼, Midwest Oil 7-A.
2-39-79 NW¼, Wyoming Asso. 23-A.
7-39-78 SE¼, Chappell Oil 2.
10-39-79 NW¼, Hardenorf et al.
20-39-78 SE¼, Mutual Oil 1.
4-38-78 SE¼, R. C. Tarrant 1.
35-39-78 SW¼, Teapot Dome Synd. 15-A.
2-38-78 SE¼, Teapot Dome Synd. 34-A.
2-38-78 NE¼, Teapot Dome Synd.
Rigs, 46; wells drilling, 90; total, 136.

LANCE CREEK

Wells Drilling

28-36-65 Tom Bell, Buck Creek Oil 6.
3-35-65 Tom Bell, Buck Creek Oil 5.
5-35-65 Elliott, Western States O. and L. 2.
5-35-65 Schuricht, Ohio Oil 1.
5-35-65 Thompson, Ohio Oil 1.

Shut Down

18-35-65 NE¼, Union Oil 1.
East part, Clark Prod. Co. 1.
Wells drilling, 7.

WARM SPRINGS, GRASS CREEK, ETC.

Rigs

13-44-98 NW¼, Western States O. and L. 17.
24-44-98 NE¼, Western States O. and L.
23-44-93 Flavin, Ohio Oil 1.
5-47-90 Heltzler, Ohio Oil 1.
Gebo Dome, Utah O. and R. 1.

Wells Drilling

14-44-98 NW¼, Midwest Ref. 1.
19-46-98 Ridgeley, Midwest Ref. 17.
31-48-90 Brome, Ohio Oil 1.
18-46-98 Washakie, Ohio Oil 4.
26-46-100 Prod. and Ref. 1.
Thermopolis Town Lot, H. D. Curtis 1.
27-46-98 Columbus Oil 1.
16-46-93 Curtis Oil 1.
36-43-91 Utha Oil & R. 1.
13-45-93 SW¼, Midwest Ref. 1.
11-45-97 SE¼, Midwest Ref. 1.
18-46-98 Meeteetsee, Midwest Ref. 19-A.
19-46-98 State, Ohio Oil 39.
20-46-98 Mill Iron, Ohio Oil 68.
12-45-97 SW¼, Midwest Ref. 1.
18-46-98 Wylie, Ohio Oil 19.
Warm Springs Field, Leslie Oil.
31-48-99 SW¼, Midwest Ref.

Shut Down

27-46-98 Dickie Oil 1.
8-46-98 NW¼, Grass Creek Prod. 1.
17-46-98 NW¼, Tunadore Oil 1.
27-41-91 Wyoming Missouri Oil 1.
Rigs, 5; wells drilling, 22; total, 27.

BIG HORN BASIN

Rigs

24-58-99 Elk 3, Ohio Oil 23.
32-56-97 Howell, Occidental Oil.
Crystal Creek, C. W. Litton.
Cowley District, C. W. Litton.

Wells Drilling

31-48-100 SW¼, Midwest Ref. Co. 1.
33-56-97 Cross Gas Co., Ohio Oil 1.
Lamb Anticline, Vanguard Oil 3.
32-58-99 SW¼, Midwest Ref. 1.
30-56-97 Prod. and Ref. 1.
Torchlight Dome, Bruce Holding Co.
32-58-99 Thompson Elk Basin Oil.
26-57-95 Transark Oil 1.
8-51-100 Sonners, Ohio Oil 1.
23-53-100 Union Oil 1.
34- 9-23 Boyd Oil 1.
35- 9-23 Elk 11, Midwest Ref. 2.

Shut Down

24-58-100 Beck et al.
Cody District, Pahaska Synd.
17-46-91 Fontier O. and G.
2-56-97 Allen Oil.
23-58-97 Greenless et al.
16-47-100 Big Horn Dev. Co. 1.
Cowley District, Julius Williams.
Burlington District, Tatman Mt. Oil.
Deaver District, Montana-Wyoming Oil 1.
Rigs, 4; wells drilling, 21; total, 25.

LOST SOLDIER

Rigs

2-19-88 Hatfield Oil 2.
32-26-87 NW¼, Prod. O. and G. Co. 1.
36-25-89 NE¼, Prod. and Ref. 2.
10-26-90 U. S. Pet.
16-25-89 NW¼, General Pet. 4.
8-25-86 General Pet. 1.
31-25-86 Gov. land, General Pet. 3, 4.
21-26-86 Portland Wyoming 4.

Wells Drilling

25-26-89 SW¼, Bair Oil F-1.
12-26-90 Texas Prod. 1.
3-26-90 SE¼, Texas Prod. 2.
14-25-89 Gov. land, Prod. and Ref. 1.
14-26-90 NW¼, Bair Oil B-3.
3-26-90 SE¼, Bair Oil 39-A.
22-26-90 NE¼, Prod. and Ref. 2.
7-26-89 NW¼, Prod. and Ref. 3, 4.
4-25-88 NE¼, Prod. and Ref. 2.
33-26-88 SE¼, Prod. and Ref. 2.
25-26-88 SE¼, Hughes Royalty 1.
35-25-88 SW¼, Prod. and Ref. 2.
35-26-88 NE¼, Prod. and Ref. 4.
34-26-88 SW¼, Kasoming Oil C-2.
25-26-88 SW¼, Kasoming Oil D-1.
34-27-90 S½, Annabell Wyoming Oil 1.
9-25-86 SE¼, Sand Hills Oil 1, 2.
26-26-86 Portland Wyoming 1, 2, 3.
33-26-88 NE¼, Prod. and Ref. 1, 3.
2-26-90 SE¼, Prod. and Ref. 1.
11-26-90 Bair Oil 36-A, 47-A.
3-25-87 Gov. land, General Pet.
22-26-98 Prod. and Ref. 1.
36-26-88 Ohio Oil 1.
1-23-89 Prod. and Ref. 1.
10-26-90 NE¼, Bair Oil C-2.
5-24-86 Wickersham, Ohio Oil 1.

Shut Down

24-26-87 SW¼, Prod. and Ref. 20.
25-26-86 Prod. and Ref. 22.
2-24-87 Calhoun, Ohio Oil 2.
10-26-88 Renroh Synd.
1-25-88 NE¼, M. and S. Synd.
25-25-88 M. M. Armstrong.
11-26-87 Gov. land, Emery Synd.
2-25-87 Gov. land, General Pet. 1.
16-25-86 Gov. land, General Pet. 3.
3-25-87 Gov. land, General Pet. 1.
31-26-86 Gov. land, General Pet. 1.
28-26-86 Gov. land, Columbia Oil 1.
14-25-89 Gov. land, Prod. and Ref. 1.
16-26-89 U. S. Pet.
8-25-89 Gov. land, U. S. Waugh.
25-26-99 Gov. land, Commonwealth Pet.
Rigs, 9; wells drilling, 50; total, 59.

ROCK RIVER DISTRICT

Rigs

2-19-78 H. and C., Ohio Oil 9.

Wells Drilling

34-23-79 NE¼, Central Pipe Line 1.
34-20-78 State, Ohio Oil 10.
14-15-75 SE¼, Wyoming Hollow Basin Co. 1.
26-21-79 Southwestern Pet. 2.
23-16-74 Gov. land, G. A. Briggs.
27-20-78 D. C. Co., Ohio Oil 2.
25-21-79 SE¼, Southwestern Pet. 1.

Shut Down

4-19-78 State, Hutton Lake Oil 1.
32-16-74 Gov. land, Spindle Top Oil 1.
18- 5-75 Gov. land, Apex Ref. 1.
18-15-75 Gov. land, Pet. Oil Fields 1.
12-20-77 Gov. land, McLaughlin et al.
10-18-77 Gov. land, Carbon Oil 1.
11-19-76 Gov. land, Dutton Creek O. and G.
21-21-76 Gov. land, McMurray et al.
32-21-78 Gov. land, Ross et al.
20-18-77 Gov. land, Wyoming Rock Cr. Co. 1.
Rigs, 1; wells drilling, 17; total, 18.

FREMONT COUNTY

Rigs

23-32-95 Sand Draw, Prod. and Ref. 2.
2-39-83 Chemical Dome, Lux Oil Corp.
Sage Creek, Washakie Synd.
29-34-92 Oliver et al.

Wells Drilling

15-6-2 SW¼, Union Oil 13.
Dutton Basin, Texas Prod. Co.
18-27-95 SW¼, Sage Creek Pet. 3.
24-23-96 Red Desert Oil Synd.
Lysite District, Miners O. and G. 1.
15-34-90 Ward Oil 1.
27- 6- 3 Kinney Coastal Oil 1.
9-32-95 Sand Draw, Prod. and Ref. 2.
15-32-95 Sand Draw, Prod. and Ref. 3.
14-32-95 Riverton Drg. Co. 1.
7-28-92 NW¼, Southwestern Pet. 1.
8- 5- 2 Marine Oil 2.
17-27-95 Sage Creek Pet. 2.
Burley Dome, Burley Dome Oil 1.
Wind River District, Teton Pet. 1.
2-27-92 Fremont Consol. Pet. 1.

Shut Down

25-27-92 American Workers Oil Fields 1.
14-28-93 American Workers Oil Fields 1.
26- 5- 2 Connolly Oil and Land.
Derby Dome, Derby Dome Oil 8, 9.
14-35- 2 Prod. and Ref. 1.
Shoshoni District, Indian Oil 1.
Chemical Dome, Shoshoni Synd. 1.
Lower Muskrat, Minnesota Western 1.
16-38-93 Howe Oil & Gas.
McComb Dome, Northern Wyoming Oil 1.
Maverick Springs, Maverick Springs Dev. 1.
Dutton Basin, Seal Oil Asso.
Rigs, 4; wells drilling, 29; total, 33.

MULE CREEK

Shut Down

36-41-61 Western Dakota Oil 1.
30-39-60 Western States O. and L.
Wells drilling, 2.

OSAGE

Rigs

31-46-63 Clark et al 1.
25-46-64 Fletcher Oil.
30-46-63 Glenn Oil.
17-46-63 Lafleich Oil.
17-46-63 Lafleich Oil.
17-46-63 Osage Trust Co. 9.
19-46-63 Sinclair Wyoming.
31-46-63 Tom Don Oil.

Wells Drilling

11-45-64 Frederick Oil 1.
12-46-64 Osage Trust Co. 19.
6-46-63 Osage Trust Co.
20-46-63 Sanke et al 3.
19-46-63 Sinclair Wyoming 11.

Shut Down

21-45-63 Bachellor Oil 1.
8-45-63 Griffith et al 1.
18-46-63 High Test Oil 2.
Rigs, 8; wells drilling, 8; total, 16.

NATRONA COUNTY

Rigs

22-37-81 California Oil 1.

Wells Drilling

18-33-83 NW¼, California Oil 5.
15-32-82 Danaher Synd. 1.
26-37-82 SE¼, Midwest Ref. 1.
31-40-80 Comet Synd.
9-34-82 Bradford Wyoming 1.
20-37-82 NW¼, Wyland Synd. 1.
Poison Spider Field, Fargo Oil 24, 25, 26.
10-36-85 Boone Dome, New York Oil.
35-35-84 E½, Alaska Dev. 1.
35-35-84 W½, Alaska Dev. 2.
Two Bar Dome, Casper Synd. 1.
12-33-82 New York Oil 10.
9-35-85 New York Oil 4.

Shut Down

2-34-84 California Oil 1.
Johnson Ranch, Newton et al.
12-34-84 Cheney et al.
Lox Anticline, Lox Synd.
Rigs, 1; wells drilling, 19; total, 20.

LINCOLN AND UINTAH COUNTIES

Rigs

3-26-113 Wyoming Reserve Oil.
12-29-93 Federal Drg. Co.
12-15-118 Prod. O. and G.
Waterfall Dome, Kio-ro-po Synd.

Wells Drilling

Corder Ranch, Beaver Oil Co.
30-14-118 Hyland O. and G.

Shut Down

Afton District, Wyoming Idaho Oil 1.
11-21-115 Waterfall District, Gulf Coast Oil.
Cretaceous Field, R. N. Co. 1.
28-28-112 Geo. Downley et al 1.
Big Piney, Lincoln Idaho 3.
Cumberland Dome, J. A. Moore.
1-29-112 Utterback Synd.
1-28-114 Chas. Lackey et al.
Big Piney, Piney Crescent Oil.
Big Piney, Nippon Oil.
Waterfall Dome, Consolidated Pet.
Carter Field, Wyoming Illinois Oil 1.
Fossil Field, Wyoming Pacific Oil.
Davison Dome, Gulf Coast Oil.
14-21-117 Hersman Oil.
Rigs, 4; wells dilling, 17; total, 21.

BAXTER BASIN

Rigs

27-17-104 Montacal Oil 1.
7-17-103 Petrogas Oil.

Wells Drilling

10-16-104 SE¼, Midwest Ref. 29.
10-16-104 NW¼, Midwest Ref. 36.
2-17-104 NE¼, Midwest Ref. 1.
24-17-104 SW¼, Montacal Oil 1.
36-18-104 NE¼, Midwest Ref. 1-X.
25-18-104 SE¼, Midwest Ref. 29.
36-17-104 NW¼, Prod. and Ref. 1.
22-16-104 A. J. P., Ohio Oil 1.
14-17-104 Hay, Ohio Oil 1.

Shut Down

26-17-104 NE¼, Associated Oil 1.
23-17-104 Associated Oil 1.
30-18-104 Midwest Ref. 6-AX.
8-16-104 NE¼, Montacal Oil 1.
Rigs, 2; wells drilling, 13; total, 15.

MISCELLANEOUS—WYOMING

Rigs

Newcastle District, Ferguson et al.
Dewey Dome, Mexico Wyoming Oil.
Moorcroft District, Fee and Rice.
15-51-67 Greytop Oil.
Little Missouri, Union Oil.
32-48-63 Wyoming Dev. Synd.
Rozet Dome, Omaha Synd.

Wells Drilling

17-46-82 Tarrant Syndicate.
20-21-80 Prod. and Ref. 1.
Buffalo District, Kinney Coastal Oil.
20-21-80 Prod. and Ref. 3.
16-21-80 Prod. and Ref. 1.
28-47-65 Gose Synd.
22-45-62 Shaw & Scott.
Colony District, Walter & Barnard.
Clay Basin, Prod. and Ref. 1.
21-42-82 Carter Oil 3.
8-68-65 Prod. and Ref. 1.
Rozet Dome, Rozet Dome Oil 1.
5-31-70 Douglas District, Frey & Dye.
17-48-82 Billy Creek, Carter Oil 4.
Glendo District, Nebraska Synd.
Vernon Dome, Walter Hargis et al.
9-41-80 Newton & Maxwell 1.
23-39-70 Womens National Oil 1.

Shut Down

Lingle District, Foreman et al.
16-42-79 Atlantic Drg. Co. 1.
Pickett Lake, Annabell Wyoming 1.
La Prele, Armour Synd.
Moorcroft Field, Southwest Oil.
Stroner Ranch, Illinois Wyoming Oil 1.
Cottonwood Dome, Baker Pet.
Moorcroft District, McWhorter interests.
Wakeman District, Mississippi Delta.
17-50-68 Trail Creek Oil.
17-51-65 Houghton Oil.
Barger Ranch, Wyoming Hi Gravity Oil.
33-36-78 Turner Creek Oil.
Page Dome, Crook County, Hover Bros.
Douglas District, Reliance Oil.
Douglas District, Ajax Wyoming Oil.
Horse Creek, National Oil.
7-37-72 Cheyenne River Oil.
26-27-61 Platte Wyoming Oil.
18-39-68 Glendo O. and G.
11-31-71 La Bonte O. and G.
1-16-70 Blaiser Synd.
2-25- 5 Lost Creek Consol.
Thornton Field, Nefsy Bros.
Rigs, 7; wells drilling, 43; total, 43.

MONTANA

CAT CREEK

Rigs

West Cat Ceek, California Co. 5.
2-15-28 California Co. 2.

Wells Drilling

W. Cat Creek, California Co. 4.
9-15-27 Peerless Oil 2.
23-14-28 Winnett Pacific Oil 1.
1-15-28 Custer O. and G. 1.
28-16-28 Republic, Peerless Oil 1.
9-15-29 NE¼, Frantz Corp. 8.
7-15-29 NW¼, Fifty Six Pet.
7-15-29 NW¼, Hogan Oil 2.
12-15-28 NE¼, Shaffer O. and R.
10-15-29 Fifty Six Pet.
9-15-29 NE¼, Mid Northern Oil.
29-14-29 Flatwillow Oil 1.
27-15-30 Frantz Corp.
24-15-30 Absoraka Oil Dev.

Shut Down

22-15-30 A. B. Miller.
11-15-30 Helena Cat Creek Oil.
20-15-30 Montacal Oil.
8-15-29 Logan Corp.
15-15-30 Montana Synd.
24-15-30 Swartz et al.
11-15-30 Miles City Oil.
Rigs, 2; wells drilling, 21; total, 23.

KEVIN SUNBURST

Rigs

7-35-1 SW¼, Hager Stevenson 1.
25-35-2 Stannard, Beaver Oil 2.
11-35-2 Stockman's Bank, Ohio Oil 2.
9-35-2 Bruins, Western Pet. Ex. 4.
34-36-2 Davey, Ohio Oil 9.
30-35-2 Carson, Security Oil 1.
13-35-2 Barth, Hager Stevenson 2.
21-34-1 Stockmans Bank, Potiatch O. and G. 1.
20-33-2 Jarrett, Sunburst O. and G.
25-35-2 Kashkin, Ohio Oil 1.
4-35-2 Baker, Ohio Oil 8.
30-35-2 Broadwell, Hecla Oil 1.
20-35-2 Whitman, Homestake Explo. 1.
7-31-2 Jones, Olympic Oil 1.

Wells Drilling

8-35-2 McGowan, Montana Giant 1.
21-36-1 White, Jones Oil 1.
29-35-1 Bluhm, Greel Oil 1.
4-34-2 Norem, Sunburst Oil 1.
3-33-1 Seward, Sunburst Oil 1.
2-35-1 Skilton, Sweetgrass Oil 1.
4-34-2 Storme, Shoshone Oil 2.
23-33-1 Webb, Shelby O. and G. 1.
25-34-2 Stannard Wyomonta Oil 1.
9-35-2 Swears, Mid-Northern Oil 3.
24-35-2 Zimmerman, Sunburst Wells 1.
9-35-2 Howling, Mid-Northern Oil 4.
34-35-2 NW¼, Maybelle Oil 1.
11-34-4 California Co. 1.
Howling lease, Carter Oil 1.
24-32-1 Shelby Synd. 1.
9-35-2 Swears, C. Beardsley 2.
29-36-2 Malcolm, National Explo. 1.
28-27-2 McAlpine, Spartan Oil 1.
20-35-2 Halter, Kevin Roberts 1.
20-35-2 Halter, Sunburst Prod. 2.
7-34-1 Carlsen, Dakota Montana 1.

Shut Down

29-35-1 Bluhm, Mid Field Oil 1.
18-32-4 Beck Pet. 1.
25-35-3 Stewart, Campbell 1.
17-34-2 De Groat, Shelby Kevin 1.
24-35-2 NW¼, Spartan Montana 1.
16-35-3 Godertz, Campbell 1.
26-35-3 Godertz, Jr., Campbell 1.
12-34-1 Peterson, Lucky Forty Oil 1.
21-35-2 McGowan, Holding & Royalty 1.
13-35-3 Campbell, Campbell 5.
16-34-2 NW¼, Rainbow Oil 2.
4-36-2 Coe Oil 1.
21-35-3 NW¼, Shaffer Oil 1.
1-34-2 NE¼, Sunburst O. and G.
Rigs, 14; wells drilling, 36; total, 50.

MISCELLANEOUS—MONTANA

Rigs

Livingston Dome, Whiteside et al.
Porcupine Dome, Stellar O. and G. 1.
Great Falls District, Virgelle Oil.
24-15-15 Fullerton Oil 1.
12-10-32 Hibbard Oil 1.

Wells Drilling

30-15-26 NE¼, Wilson and Fisher 1.
14- 2-22 NW¼, H. E. Frye et al 1.
22- 2-25 McMenamin et al 1.
35- 7-13 Churchwell et al.
18- 6-24 Minnemyer & Newman 1.
5- 1-21 Cairncross Oil & Ex. 1.
10-18- 2 Moscow Oil & Ex. 1.
30-15-26 Winnett Shallow Field Synd.
32- 4-16 SE¼, Consolidated O. and G. 1.
34- 7-16 NE¼, California Co. 1.
3-12-25 SW¼, Minnesota Flatwillow.
2-32-33 Smith, Homestake Explo. 1.
19-37- 4 NE¼, Gladys Belle 1.
18-23- 4 NE¼, Carter Oil 1.
12-36-5 Frazier et al 1.
29-21-14 Mid States Oil.
9-12-14 Oil Springs Dev. 1.

20-11-23 Montana Pioneer 2.
25- 7-24 Penn. Oil Dev. 1.
22-25-50 Butler O. and G.
24-20-13 Continental Prod. 1.
16-25-17 Ohio Oil 2.
17- 3-19 Snyder, Walter Bright.
20-25- 5 Larsen, Walter Bright.
3-26- 6 Jones, Walter Bright.
19-24- 2 Markham, Midwest Ref. 1.
15-27- 7 Kelly, Empire Oil 1.
25-22-13 Hager Stevenson.
27-20-13 Arrow Creek Oil 1.
McGinnis Dome, Sherard Synd. 1.
23-23-4 Flume, Montana Giant 1.
16-23-21 Lake, Carter Oil 1.
5-25- 2 NE¼, Dry Fork Oil 1.
21-24-24 Phillips Dev., Ohio Oil 1.
Bailey Dome, Montana Equipment Co.
Muddy Creek, Mountaineer Oil 1.
14-18- 4 Eliakin Oil 1.
26- 1-21 Hepp, Mid Northern Oil 1.
16-16-26 Newdigate et al 1.
14-11-24 Devils Basin, Fifty Six Pet.
15-37- 7 Empire Montana Oil.
5- 1-21 NW¼, Grimsted & Brown.
Ragged Point, Flynn Bros.
Antelope Point, Hard Times Oil.
2-26- 6 Marion Edwards.
29-14-29 Whaley et al.
24- 4-61 Absoraka Oil Dev. 1.
26-10-29 Stellar O. and G. 6.
9-10-29 Stellar O. and G. 5.
7- 4-22 Security Pet. 1.
35-32-32 NE¼, Bowdoin Oil & Gas.
25- 5- 8 SW¼, Potter Basin Oil.
27- 7-13 Harlowton O. and G. 1.
17-11-29 Absoraka Oil Dev.
Wilsal Dome, Shields Valley Oil.
4-17-20 California Co.
16-13-24 Absoraka Oil Dev.
Great Falls District, Cascade O. and G.
22- 9- 3 Greater Great Falls Oil.
21-14-26 Black Hawk Oil.
2-22-26 Bitter Creek Oil.

Shut Down

6-13-14 NE¼, Fulton Oil 1.
26-14-29 NW¼, Jackson Dome Oil.
18- 6-24 NE¼, Yellowstone Pet. Synd.
7-27- 7 Circle Oil 1.
8-11-24 Tri City Oil.
16-26-26 Walker Bros.
25-17-22 Cosmos Oil.
12-11-23 Arsted Oil.
Devils Basin, Alberta Block Coal Co.
Big Coulee, Midland Pet.
3- 4-23 Hoosier Oil.
18-12-13 Arrow Creek Pet.
25-12-25 Wayne Pet.
3-15-20 Big Bud Oil.
24- 7-12 Elk Pet. Synd.
25-32-19 Bowes Structure Oil.
36- 2- 7 Gladys Belle Oil.
Coalwood Dome, Annamay Oil.
Hailstone Basin, Hailstone Basin Oil.
Devils Basin, Montana Central Oil.
Devils Basin, Monarch Oil.
25- 5- 8 Portland Synd.
30- 2-21 Columbus Oil.
24- 5-17 Unit O. and G.
22- 2- 5 Fox et al.
19-11-23 Montana Pioneer 1.
23- 2-24 Davis Creek Synd.
13- 5-28 Beauvois Oil.
11-11-13 Kalispell Synd.
13-13-20 Omaha Pet.
32- 1-26 Tennessee Montana Oil.
6- 5-25 Grey Eagle Oil.
22-11-24 Allen Oil.
21-11-29 Success Ref. Co.
8-25- 1 Idaho Montana 1.
20-26- 1 A. M. Barringer.
31-15-25 Crow Rock Oil.
6- 6-17 Armsted Oil.
1-10-21 Williams O. and G.
2- 2-26 Clarks Fork Oil.
25- 8- 9 Beaverhead Alberta Oil.
11- 1- 1 Ruby Ridge Oil.
2- 2-12 Montana Pacific Oil.
10-34-34 Mid Northern Oil.
12- 1-22 SW¼, Lawson Ritter.
Rigs, 6; wells drilling, 106; total, 111.

UTAH

MISCELLANEOUS

Rigs

Mexican Hat Dome, Utah Southern Oil.

Wells Drilling

Gypsum Creek, San Juan Oil & Dev. Co.
12-19-23 Gov. land, Utah O. and R.
12-15-11 Gov. land, Utah O. and R.
34-25-21 Big Six Oil.
16- 2- 8 State, Western Empire Oil.
19-42-19 Gov. land, Monumental Oil.
35-32-14 Wilson Cranmer Co.
6- 2- 8 Ohio Oil 1.
Crescent Dome, Crescent Eagle Oil.
31-42-18 Union Oil of Utah.

Shut Down

12-14-19 Castelda1e Oil.
27-16- 4 Producers Oil.
Lakeside Dome, W. R. Holmes.
Diamond Peck, Franco Utah Oil.
Diamond Fork, Gustaven Oil.
17- 4- 6 Ute Pet., Utah Southern Oil.
25-13-1 Cache Valley Oil Assn.
Box Elder County, Nebeker Interests.
2-17-3 Utah Central Oil.
Moffat Dome, Uintah Explo. Co.
Harrisburg Dome, Virgin Oil Co.
Evans claim, Uintah County, U. S. Oil Co.
Hill Creek, Hill Creek O. and R.
Hill Creek, Mutual Oil.
Rigs, 1; wells drilling, 24; total, 25.

WYOMING

WELLS COMPLETED

7-32-76 Crary, Texas Prod. Co. 31..... 105
12-39-79 Castle Rock 2, Ohio Oil 3..... 125
13-39-79 Castle Rock 1, Ohio Oil 7..... 115
12-39-79 NW¼, Kasoming Oil D-3 50
11-39-79 NW¼, Kasoming Oil C-8..... 100
18-39-79 NE¼, E. T. Williams 4..... 100
18-40-78 NW¼, Prod. and Ref. 9-A..... 30
13-39-79 SE¼, Prod. and Ref. S-2.... 375
22-40-79 NW¼, Continental Prod. B-6.. 100
17-39-78 NE¼, Carter Oil P-9 300
5-39-78 SE¼, Carter Oil D-6 50
24-39-79 NE¼, Kinney Coastal 16-A.... 35
24-40-79 SE¼, Mutual Oil 13-A 10
8-39-78 SW¼, Mutual Oil F-6..... 250
24-39-79 NE¼, Mutual Oil 22-AS 100
2-39-79 SW¼, Mutual Oil 13-AX .....dry
35-40-79 NW¼, Wyoming Asso. 29-A 1000
24-40-79 NW¼, Wyoming Asso. 26-A 500
18-40-78 SW¼, Salt Creek Cons. 25-A...1445
6-39-78 SE¼, Mt. and Gulf 6-AX..... 1300
22-39-78 NW¼, Collossal Oil Synd. 1.... 150
2-39-79 NW¼, Salt Creek Cons. 21-AX 300
13-40-79 SE¼, Mountain & Gulf 1-A ... 300
13-40-79 NE¼, Mountain & Gulf 1-A... 560
17-39-78 NW¼, Western States O. and L. 36-AX 75
17-39-78 NW¼, Western States O. and L. 12-AX 100
19-40-78 SW¼, Midwest Oil 21-A 462
27-40-79 NE¼, Wyoming Asso. 5-A ... 300
34-40-79 NE¼, Wyoming Asso. 26-AX.. 451
11-40-79 NW¼, Mountain & Gulf 36-AS 300
21-39-78 SW¼, Mammoth Oil 302 65
11-38-78 NW¼, Mammoth Oil 201 235
28-39-78 SW¼, Mammoth Oil 304 210
29-39-78 NE¼, Mammoth Oil 109 85
27-39-78 SW¼, Mammoth Oil 303 240
26-36-65 Rodeo 3, Buck Creek O. and G. 1 ..... dry
23-42-90 C. D. Markham ..... dry
12-45-97 Midwest Ref. Co. ..... gas
30-58-99 Woods, Ohio Oil 14 ..... dry
30-58-99 NW¼, Midwest Ref. 15 10
Sec. 29, Mahoney Dome, Prod. and Ref. gas
3-26-90 SW¼, Hughes Oil B-3 ..... dry
3-26-90 SW¼, Hughes Oil B-1 ..... dry
3-19-78 H. and C., Ohio Oil 2 50
11-19-78 H. and C., Ohio Oil 2..... 250
34-20-78 State, Ohio Oil 11 75
20-46-63 NW¼, Sankey and Stahl 50
12-33-83 Gordon, New York Oil 9..... gas
10-35-85 New York Oil ..... gas
16-44-62 Midwest Ref. 1 ..... dry

Wells completed	51
Production	10,258
Dry	8
Gas	4
Gas production	36,000,000

MONTANA

WELLS COMPLETED

1-15-28 Laverdeau, Mid Northern Oil 3 dry
12-15-28 Van Tassel, California Co. 3.. dry
22-35- 2 Pewters, Homestake Explo. 4. 10
15-35- 2 Kenney, Western Pet. Ex. 2.. 15
8-35- 2 McGowan, Montana Giant 1.. 25
36-35-3 State, Nichols et al ..... gas
29-35-1 Maughan, Bitter Creek Oil 2... 100
14-35-2 Reeg, Kio-Ora-Sunburst 1 25
20-35-2 McBride, Canadian American 1. 170
29-35-1 Maughan, Swaney Oil 1 75
14-35-1 Hauliston, Folmshee O. and R.. dry
11-35-2 Engemon, Stapleton Oil 2 75
30-35-1 Emmons, Dakota Montana Oil.. 50
36-35-2 State, Adams Homestake 2.... 50
25-17-22 SE¼, Golden West Oil 1 ..... dry
4-27-6 Gypsy Oil 1 ..... dry
1- 6-20 Bitter Root Oil 1 ..... dry

Wells completed	17
Production	595
Dry	6
Gas	1
Gas production	3,000,000

TRACT OF 20 ACRES SOLD FOR $90,000

ARDMORE, Okla., Jan. 5.—The Atlantic Oil Producing Co. has acquired a 20-acre tract in the northwest portion of the Graham Field for a total consideration of $90,000, or at the rate of $4,500 per acre, one-half of which is to be paid cash and the other half in oil. There is a test now drilling on the acreage, started by its original owners, whom the Atlantic people have agreed to reimburse for the amount expended.

The lease was sold by the fee owners, including Roy M. Johnson, Ed Galt, D. C. Fitzgerald, Tom Champion, L. D. Dolman, Max Westheimer and P. C. Dings.

MORE ACTIVITY IN TRINIDAD

An increased activity is reported from Trinidad in the petroleum fields, particularly in the San Francique-Fyzabad district. At Grant's Trace a new rig is being erected, and a new well is being drilled on the Siparia-Oropouche road. Preparations are being made to bring into production a well at the Fyzabad-Guapo road junction, and another well in the vicinity is being completed. Two new locations are being made in the neighborhood. Installation of machinery in a nearby pumping station and the construction of two steel tanks are also under way. Companies in the Fyzabad area are increasing production and there seems to be evidence of a vigorous campaign for new development.

MAY BE POLAND'S BEST WELL

Getting oil in one well at Bitkow, with a production of 80 tons (about 500 bbls.) per 24 hours, is the most important event in the Polish oil fields. The well is No. 104, belonging to the "Dabrowa" Co., which is carrying on intensive drilling. The well is 822 meters deep and its crude oil is of a high-grade character, and if for a longer period of time the production will be on the same level the well will be not only the most abundant at Bitkow, but in all Poland. For the last few years wells with such productiveness have been infrequent in the Boryslaw district.

PETROLIA DRILLERS GUESTS OF SULTAN

CHATHAM, Ont., Jan. 5.—Drillers are generally hale fellows well met, but it will be news to the home folk that W. O. Gillespie and other Canadian drillers in Borneo have been hobnobbing with royalty in that far-off land. The occasion was a tournament held in honor of the birthday of His Highness Sir Ibrahim, Sultan of Johore, D. K., S. P. M., J., G. C. M. G., K. M. K. B. E—which is half the alphabet. The presence of the Petrolia boys at the festivities, no doubt accounts for the line, "God Save the Sultan," at the bottom of each page of the program. A correspondent in Borneo writes these details:

"Messrs. W. O. Gillespie, petroleum engineer, Bloss Sutherland and Stuart Nesbit, drilling foremen, and W. Geddes of the count's department, spent September in Singapore with C. Campbell, general sportsman. On September 18, they made up a motor party and attended the polo tournament given in honor of the birthday of His Highness, Sir Ibrahim, the Sultan of Johore. The drive from the Raffles Hotel to Johore is 18 miles, over fairly good roads, a little narrow, but through a beautiful country profuse with rubber, cocoanut and fruit plantations. A launch took them across the straits and about 3 miles on the Johore side of the straits to the polo grounds. Mr. Campbell, who is a friend of the Sultan, introduced the party to his younger or second son, Prince Bakar, who was riding in the match. It was an ideal day, and the party thoroughly enjoyed themselves and voted it one of the best days spent in Singapore, thanks to Mr. Campbell, who showed them some of the prettiest and best spots in Singapore."

Classified Advertisements Pages 108-109

GASOLINE 62 CENTS, PALESTINE

The number of motor cars now in use in Palestine is estimated at 1,000. The selling of surplus army trucks and automobiles at reduced prices by the British Government limited importations, especially of trucks, but several light American cars are finding a market. The country is more or less mountainous, and a 30 to 40-horsepower car is required for the steep grades. Gasoline retails at from 60 to 62 cents per gallon, and the four-cylinder car is the most popular for reasons of economy. Open touring cars are preferred; the number of closed models is negligible.

RUSSIAN KEROSENE COMES HERE

The exports of the Russian State Petroleum Syndicate between July 1 and October 1 of 1923, according to Economic Life, Moscow, consisted of 90,621 tons of various petroleum products, including 42,453 tons of kerosene, 13,428 tons of benzine and gasoline, 19,960 tons of oil with paraffin content, and 2,960 tons of solar oil. Kerosene went principally to the United Kingdom; benzine, gasoline and machine oils to Germany; and paraffin oil to Austria and Hungary. Large quantities of petroleum products have also been sold abroad by the syndicate for future delivery, of which a part has already been shipped.

TEXAS APPEALS HUMBLE CASE

AUSTIN, Tex., Jan. 5.—Appeal of the State of Texas in its antitrust ouster suit against the Humble Oil & Refining Co., in which District Judge George Calhoun held ownership of a majority of the stock by the Standard Oil Co. of New Jersey, a banished corporation, does not violate the antitrust statutes, was taken by the Attorney General to the Third Court of Civil Appeal at Austin.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for November

Runs

Company—	Month	Daily Av.
•Prairie Pipe Line Co.	3,390,000	113,000
Gulf Pipe Line Co.	1,119,929	37,331
Texas Pipe Line Co. of Okla.	536,614	17,887
Magnolia Pet. Co.	910,574	30,352
•Empire Pipe Line Co.	761,934	25,398
Cosden Pipe Line Co.	608,431	20,281
•Sinclair Pipe Line Co.	615,000	20,500
•Other lines	6,510,000	227,000
Total November	14,752,482	•491,749
Total October	13,728,260	442,848
Difference	1,024,222	48,901

Shipments

Company—	Month	Daily Av.
†Prairie Pipe Line Co.	2,650,566	88,385
Gulf Pipe Line Co.	886,976	29,566
Texas Pipe Line Co. of Okla.	387,276	12,909
Magnolia Pet. Co.	720,799	24,026
Empire Pipe Line Co.	751,514	25,050
Cosden Pipe Line Co.	647,170	21,572
†Sinclair Pipe Line Co.	1,181,140	39,371
*Other lines	6,000,000	200,000
Total November	13,225,241	440,839
Total October	13,302,342	429,108
Difference	77,101	10,731

Stocks

Prairie Oil & Gas Co.	23,500,000
Prairie Pipe Line Co.	1,750,000
Gulf Pipe Line Co. & Gypsy Oil Co.	9,121,909
The Texas Co.	7,038,592
Magnolia Petroleum Co.	8,165,831
Empire Pipe Line Co.	2,872,447
Cosden Pipe Line Co.	3,338,901
Carter Oil Co.	17,922,771
*Sinclair Crude Oil Purchasing Co.	30,325,000
Other lines	4,800,000
Total November	108,835,451
Total October	108,071,221
Difference	764,230

*Estimated. †Includes shipments of Texas crude oil.

Note—Stocks do not include approximately 7,000,000 bbls. of crude oil held in storage on private tank farms and leases.

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1920	1921	1922	1923
January	56,004	64,460	67,702	75,790
February	48,699	70,054	75,036	71,093
March	67,745	68,555	78,531	76,592
April	64,589	65,036	75,462	75,614
May	63,937	65,466	77,592	77,365
June	68,750	62,438	76,193	77,592
July	66,489	59,486	76,436	71,879
August	63,861	64,888	79,387	76,910
September	68,102	60,110	78,512	72,358
October	65,066	57,688	77,209	76,256
November	63,758	58,470	75,318	.....
December	60,976	61,000	73,351	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1920	1921	1922	1923
January	98,835	115,550	119,792	171,067
February	107,146	96,736	111,362	164,219
March	110,777	84,168	127,753	185,487
April	114,090	101,015	127,068	179,751
May	110,219	100,253	127,840	177,102
June	102,598	105,037	137,638	173,598
July	112,340	97,096	137,872	168,320
August	122,296	101,652	153,275	143,766
September	127,131	117,440	158,761	137,266
October	122,891	105,728	165,345	134,597
November	117,730	121,803	166,677	131,426
December	117,201	104,023	172,861	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1921	1922	1923
January	7,916,353	16,297,858	14,040,567
February	8,721,878	17,009,293	14,028,437
March	9,818,766	16,877,937	13,873,146
April	10,369,941	16,777,842	13,737,575
May	11,224,694	16,948,962	13,815,622
June	12,328,126	16,810,169	14,541,253
July	13,798,698	16,669,286	14,645,584
August	15,155,633	16,235,229	14,770,539
September	15,525,750	16,228,545	14,803,444
October	15,761,079	16,767,746	14,604,111
November	14,871,071	15,171,972	14,157,736
December	15,854,741	14,323,765	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1922—	Rcpts.	Shipmts.	Stocks
November	3,052.75	2,230.18	30,135.70
December	3,076.36	1,292.84	31,919.22
1923—			
January	2,798.55	2,461.36	32,256.41
February	2,692.93	932.33	34,017.01
March	2,978.88	12,417.00	24,578.89
April	3,529.12	3,054.09	25,053.92
May	3,538.73	4,856.42	23,736.23
June	2,927.71	4,743.78	21,920.16
July	2,996.64	1,471.57	23,445.23
August	3,199.07	3,769.84	22,874.96
September	2,829.79	5,822.38	19,882.37
October	2,694.23	5,251.81	17,324.79
November	2,980.66	4,150.98	16,154.47

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Dec. 1	2,355,986.29
Runs from wells	518,482.44
Other receipts	83,978.79
Regular deliveries	194,357.29
Other deliveries	522,484.94

The amount of Illinois oil run by the Tidewater Pipe Line Co. in November was 28,376.99 bbls., and deliveries were 91,334.80 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries from the Illinois field as follows:

	Runs	Deliveries
1922—		
November	566,508.03	434,681.97
December	552,069.33	291,868.37
1923—		
January	599,239.86	470,958.84
February	496,421.79	382,566.83
March	625,006.81	472,920.76
April	621,910.87	423,548.43
May	624,107.98	523,515.00
June	582,611.82	509,137.77
July	594,653.45	489,369.17
August	594,747.94	367,162.82
September	542,561.59	305,925.40
October	576,867.09	347,812.82
November	546,859.43	285,692.09

The Tidewater Pipe Co., Ltd., also delivered in November 213,574.90 bbls. of Oklahoma oil. The total deliveries of all grades by the Tidewater were 447,647.14 bbls.

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct., '23	Nov., '23
Nat. Transit	211,486.93	178,880.95
S. W. Pa. P. L.	93,352.02	80,301.07
Eureka P. L.	430,327.54	345,268.16
Buckeye P. L. (Macksburg)	280,073.53	266,960.03
Buckeye P. L. (Cleveland)	19,218.85	15,777.99
Buckeye P. L. (Lima, etc.)	144,889.47	130,829.28
Indiana P. L.	14,511.54	13,120.99
Cumberland P. L.	399,736.19	368,174.21
N. Y. Transit	17,402.53	14,967.98
Tidewater P. L.	163,016.59	139,902.74
Pure Oil P. L.	190,792.36	179,104.65
Emery P. L.	35,209.98	31,556.95
Indian Ref.	315,405.99	292,627.55
Paragon Dev.	21,501.81	20,277.00
Pittsburgh P. L.	10,612.83	7,892.18
Swiss P. L.	1,015.89	.....
Riggs Ref.	5,083.17	.....
Union P. L.	.....	24,630.71
Fords Brk. P. L.	.....	646.36
Allegany P. L.	.....	1,913.90
Total	2,363,937.27	2,122,845.75
Daily av.	76,256.04	70,761.52

Note—Indian Refining Co. also reported other receipts of 79,218.33 bbls. Paragon Refining Co. had other receipts of 110,958.18 bbls. Paragon Development Co. had other receipts of 4,465.46 bbls. Pittsburgh Pipe Line had other receipts of 2,604 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct., '23	Nov., '23
Nat. Transit	497,929.96	457,702.13
S. W. Pa. P. L.	283,546.24	284,651.72
Eureka P. L.	126,716.26	127,735.31
Buckeye P. L. (Macksburg)	82,031.33	95,645.60
Buckeye P. L. (Cleveland)	1,190.92	1,650.70
Buckeye P. L. (Lima, etc.)	641,793.54	666,847.26
Indiana P. L.	871,560.84	841,514.12
Cumberland P. L.	210,110.54	164,274.52
Southern P. L.	.....	288.45
Crescent P. L.	96,990.57	32,231.40
N. Y. Transit	487,333.83	296,354.77
Northern P. L.	32,004.07	37,609.13
Tidewater P. L.	166,403.13	142,737.46
Pure Oil P. L.	152,289.34	170,167.30
Emery P. L.	34,574.09	31,273.71
Paragon Ref.	145,280.60	110,583.92
Indian Ref.	291,943.99	415,349.40
Paragon Dev.	37,396.15	36,367.96
Pittsburgh P. L.	13,282.01	10,863.18
Swiss P. L.	94.30	.....
Riggs Ref.	.....	.....
Union P. L.	.....	.....
Fords Brk. P. L.	.....	693.77
Allegany P. L.	.....	1,910.63
Total	4,172,493.66	3,942,778.80
Daily av.	134,596.57	131,425.97

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of October and November, were as follows:

	Oct., '23	Nov., '23
Nat. Transit	1,197,386.76	1,139,685.63
S. W. Pa. P. L.	879,129.26	742,388.19
Eureka P. L.	2,004,502.23	1,973,159.35
Buckeye P. L. (Macksburg)	500,740.53	476,597.93
Buckeye P. L. (Cleveland)	30,341.60	13,441.11
Buckeye P. L. (Lima, etc.)	4,305,655.97	4,313,302.49
Indiana P. L.	664,435.63	721,584.24
Cumberland P. L.	667,160.74	668,231.80
Southern P. L.	1,037,436.96	1,040,173.61
Crescent P. L.	69,131.49	82,466.89
N. Y. Transit	1,467,294.82	1,171,594.41
Northern P. L.	664,694.04	771,388.12
Tidewater P. L.	.....	.....
Pure Oil P. L.	328,826.50	331,353.80
Emery P. L.	6,273.97	6,795.85
Indiana Ref.	146,464.07	167,737.84
Paragon Dev.	516,278.56	476,753.41
Pittsburgh P. L.	19,052.07	8,691.68
Swiss P. L.	9,272.45	8,873.24
Riggs Ref.	2,861.55	.....
Union P. L.	1,146.43	.....
Fords Brk P. L.	.....	32,969.21
Allegany P. L.	.....	294.98
Total	14,504,110.53	14,157,736.97
Decrease	299,332.34	346,373.56

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of October and November, showing the gross stocks of the above fields:

	Oct., '23	Nov., '23
Pennsylvania	3,791,568.58	3,818,931.71
Lima	937,787.17	918,353.97
Kentucky	1,964,677.83	1,906,641.16
Mid-Continent	7,244,243.62	6,937,311.07
Illinois	565,833.34	584,377.43
Total	14,504,110.53	14,157,736.97

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Av. bbls. per wk.—	ATLANTIC PORTS						GULF COAST PORTS					Total All Ports
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	
August	116,067	51,709	688,485	322,873	151,970	1,331,104	.....	24,612	219,030	.....	243,642	1,574,746
September	205,600	47,400	516,200	124,200	126,600	1,000,000	.....	140,600	.....	.....	140,600	1,140,600
October	195,000	56,000	626,000	220,000	107,000	1,178,000	.....	208,000	.....	.....	208,000	1,386,000
November	136,731	36,281	659,169	156,800	85,169	1,074,031	.....	219,331	.....	.....	219,331	1,293,362

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Av. bbls. per wk.—	ATLANTIC PORTS					Total	GULF COAST PORTS				Total	All Ports Total
	Baltimore	Boston	New York	Philadelphia	Others		Galveston	Baton Rouge New Orleans	Sabine Pass Pt. Arthur	Tampa		
June	62,800	84,200	358,200	153,400	161,800	757,600	301,000	228,400	212,400	45,800	787,600	1,545,200
July	71,750	116,250	451,500	112,000	218,750	970,250	367,750	280,000	208,250	23,000	879,000	1,849,250
August	116,065	89,113	374,618	102,970	197,127	879,888	338,485	266,224	234,388	45,633	1,295,730	2,175,618
September	53,600	113,000	353,200	132,000	149,600	801,400	355,200	279,400	176,000	44,800	714,200	1,456,600
October	91,250	48,000	198,500	134,000	204,000	800,750	247,000	362,500	95,000	12,500	707,000	1,507,750
November	67,200	108,869	270,669	122,500	195,060	764,200	345,490	359,331	147,469	33,367	885,731	1,649,931

PRODUCTION BY MONTHS AND DAILY AVERAGE PRODUCTION IN THE U. S. FOR 12 MONTHS

1922—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Wyoming Montana	Other Fields	Totals
December:	Month	15,426,810	13,185,416	8,707,931	2,649,900	1,596,500	2,463,291	3,108,866	3,149,445	50,288,159
	Daily average	497,639	425,336	280,901	85,330	51,500	79,461	100,286	101,595	1,622,048
1923—										
January:	Month	16,457,445	13,328,574	8,881,009	2,826,611	2,317,002	2,428,013	3,134,707	3,423,516	52,796,877
	Daily average	530,885	425,817	286,484	91,181	74,742	78,323	100,797	110,436	1,703,125
February:	Month	16,426,759	12,045,020	7,663,993	2,748,660	2,258,984	1,084,008	2,923,192	2,907,340	47,056,956
	Daily average	586,670	444,465	273,714	91,622	80,678	67,286	104,364	104,405	1,774,204
March:	Month	19,608,192	13,955,828	8,462,783	2,847,040	2,970,575	2,312,600	3,274,778	3,464,529	56,896,325
	Daily average	632,526	450,188	272,993	91,840	95,825	74,600	105,638	111,769	1,835,379
April:	Month	20,695,959	14,399,610	8,403,240	2,768,052	2,766,000	2,160,300	3,584,048	3,281,340	57,058,549
	Daily average	689,865	479,987	280,108	89,292	92,200	72,010	115,947	109,378	1,901,950
May:	Month	21,535,365	15,658,782	8,932,000	2,805,750	3,389,000	3,175,000	3,566,600	3,546,400	61,608,897
	Daily average	694,689	505,122	288,129	93,525	109,323	70,161	115,051	114,400	1,987,383
June:	Month	22,667,106	15,572,730	8,817,000	2,797,830	3,078,990	1,981,800	3,385,600	3,401,400	61,702,456
	Daily average	755,570	519,091	293,900	93,261	102,633	66,066	122,852	113,380	2,056,748
July:	Month	25,362,083	15,260,184	10,662,000	2,448,566	2,859,000	2,012,000	4,143,400	2,788,600	66,435,833
	Daily average	814,906	492,264	343,935	78,986	92,226	64,903	133,657	89,955	2,143,093
August:	Month	26,440,005	14,049,076	11,454,000	2,316,320	3,113,000	2,078,000	4,180,000	3,473,300	67,103,701
	Daily average	852,903	453,196	369,484	74,720	100,419	67,032	134,861	112,043	2,164,635
September:	Month	25,762,500	13,813,220	13,287,000	2,234,130	3,350,000	1,855,000	4,449,500	3,262,800	66,013,250
	Daily average	858,750	427,074	409,567	74,471	111,666	61,834	148,317	108,760	2,200,442
October:	Month	24,576,000	13,961,782	14,903,000	2,336,346	3,046,100	1,861,000	3,460,000	3,465,200	66,613,428
	Daily average	792,787	418,122	480,742	75,366	98,263	60,032	111,613	111,877	2,148,790
November:	Month	22,397,848	12,334,620	15,158,000	2,268,840	2,723,000	1,786,000	4,573,300	3,135,700	64,377,308
	Daily average	746,595	411,154	505,267	75,628	90,767	59,533	152,443	104,523	2,145,910
	Twelve months	257,256,471	165,563,842	124,331,954	31,048,045	33,468,051	24,197,017	43,772,991	39,302,670	718,940,991
	Total daily average	704,812	453,600	340,636	85,063	91,694	66,293	119,296	107,678	1,968,176

96% less corrosion

Number of runs	Key Caps	Loss of weight
74	Plain steel	73 Grammes
74	Calorized	3 "

Corroding Key caps caused continual trouble in a big refinery until they Calorized them. The result was shown in a careful test. Note the data above.

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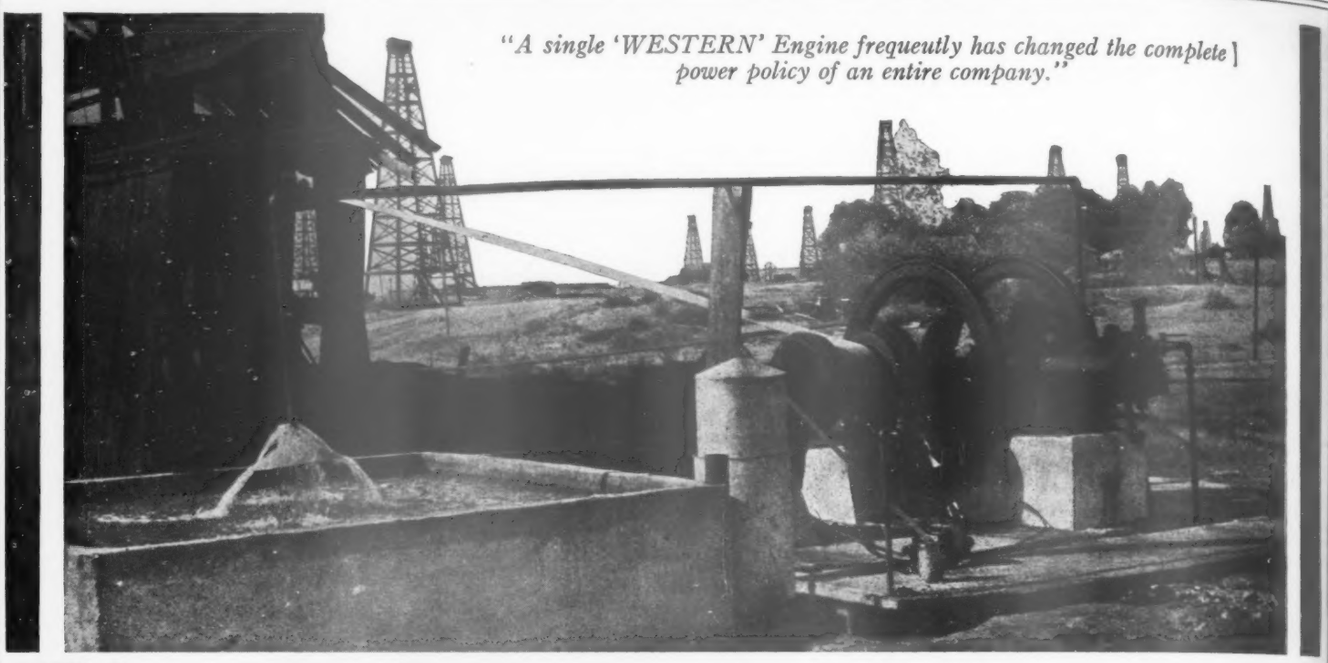

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These "Western" pumping engines have records of performance, efficient and economical operation and upkeep that are most unusual, and frequently astounding to the operator who has not kept fully informed of what "Western" is doing in the petroleum industry.

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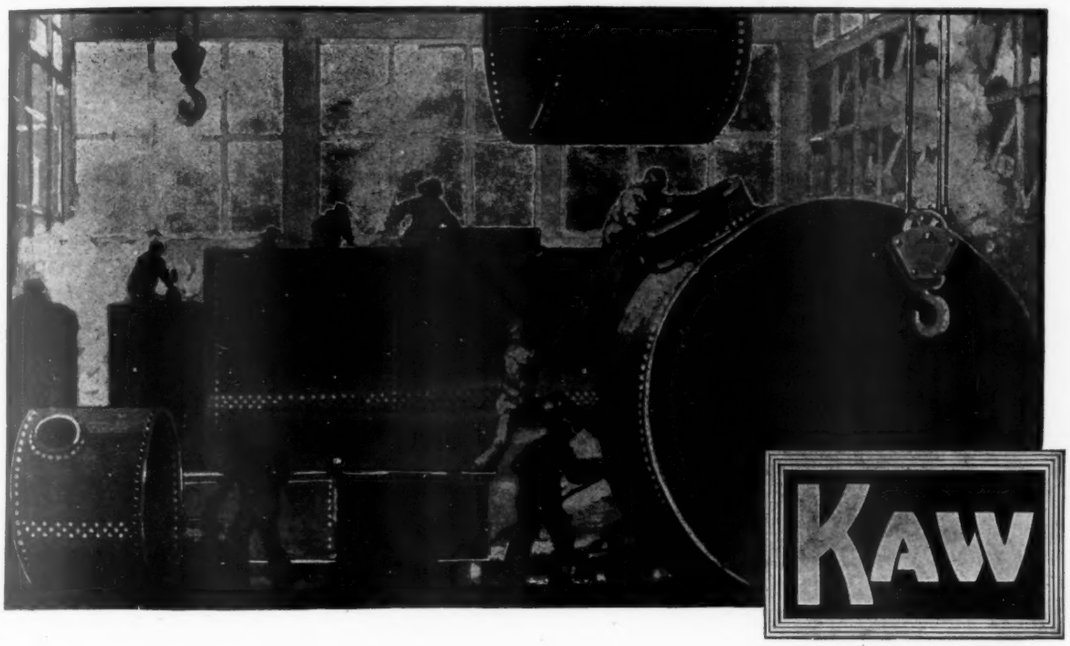

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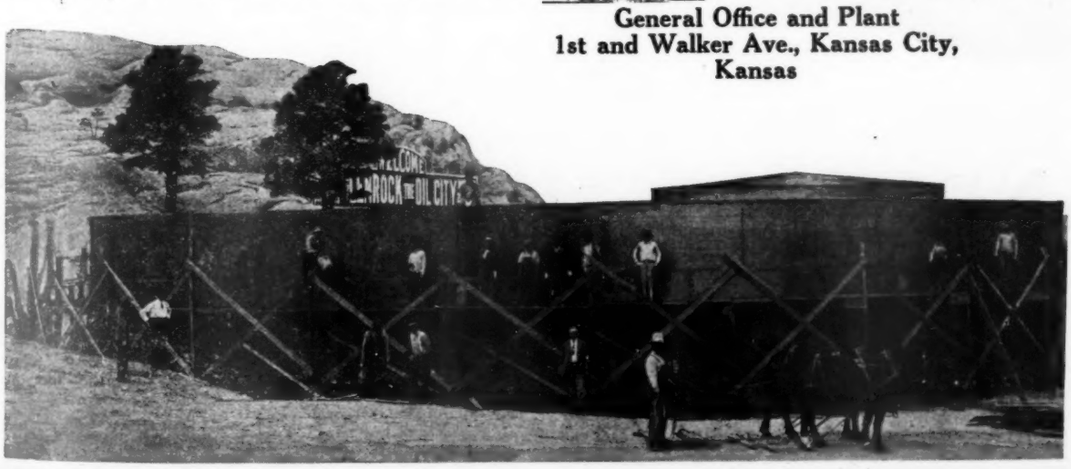

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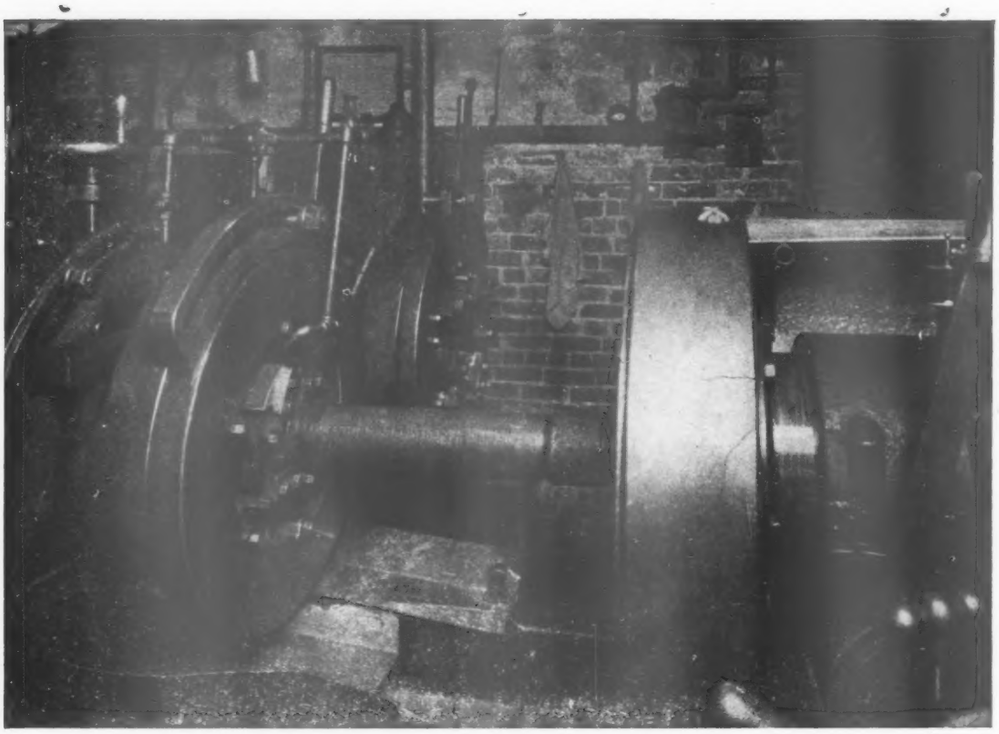
APPLY LANDIS DIE HEADS TO YOUR PIPE MACHINES



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The operator remarked, "A baby can handle these heads," so easily are they operated. **One set of chasers** will thread any diameter within the range of the head provided the pitch, taper and form of thread remain constant. All that is required when changing from one diameter to another is to move the lever to the positions designated by the graduations on the cam ring. Think of the enormous saving in time this will effect.

Landis Pipe Die Heads are daily being applied to many makes of pipe machines. Many of our customers report a saving of 50 to 75 per cent in cost of chaser upkeep. The threads are "Landis Quality," which means accurate and well formed.

Investigate your threading costs. Apply the Landis Die Head to your pipe machine and eliminate bad threads and expensive upkeep of chasers.

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Waynesboro, Pa.

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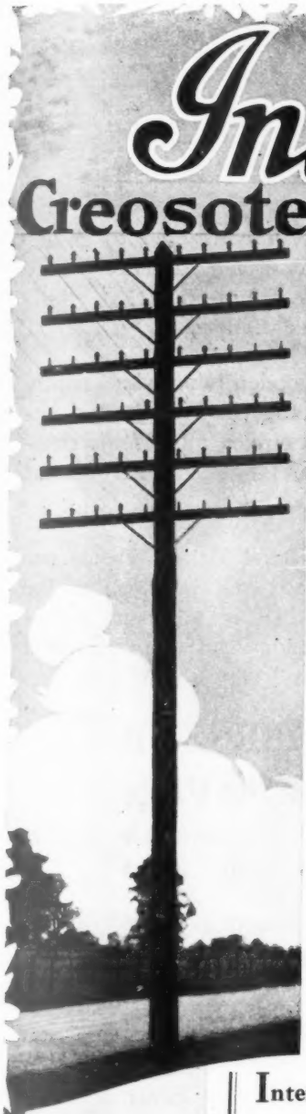
International Creosoted Yellow Pine Poles



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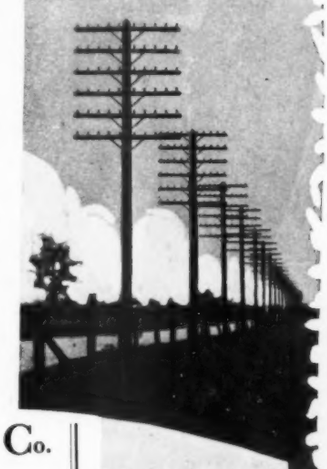
Write for full particulars.



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STEEL Angle Arms, securely riveted to circles of Steel Cants and bolted to a Pareelite* Shaft Hub, provide a band wheel framework that eliminates the use of band wheel flanges.

Rows of standard wooden band wheel cants, staggered and nailed together, are bolted between the steel cant circles, and evenly compressed throughout the circumference of the wheel.

Parkersburg Steel Band Wheels are made in standard diameters, faced for standard width belting, and can be supplied to fit regular sizes of band wheel shafts.

PARKERSBURG Metal Tug Pulleys

bolted to the steel angle arms, are supplied as regular equipment.

The "V" grooves assure positive traction for the bull ropes. Like the tug rims on Parkersburg steel bull wheels, these tug pulleys are Pareelite.*

When desired, Parkersburg Metal Tug Pulleys are sold separate from the Steel Band Wheels, and can be applied to any standard Wooden Band Wheel.

*Pareelite is a "High Manganese" metal—not cast iron—that will sustain a load of 4320 lbs. on arbitration test bar of the American Society for Testing Materials, and with only 7/64th inch deflection at breaking point. It has an ultimate tensile strength of 33,680 lbs. per square inch.
In *elasticity* Pareelite approaches more nearly to cast steel than any other cast ferrous metal!

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3. May be equipped with quick acting chucks so the pipe can be gripped and released without stopping the machine.
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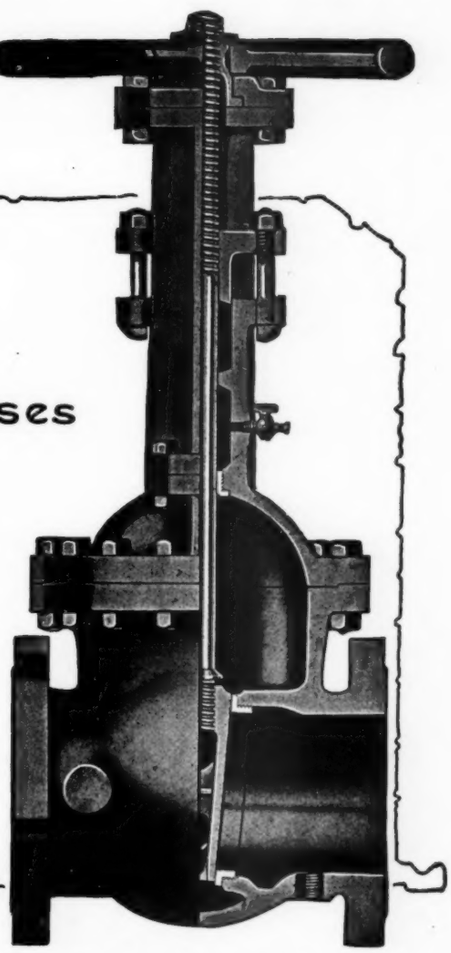
2

CHAPMAN



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up to
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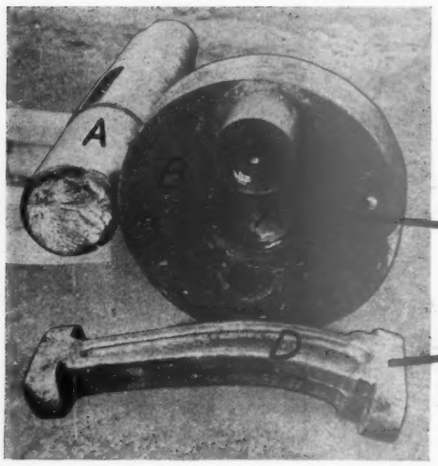
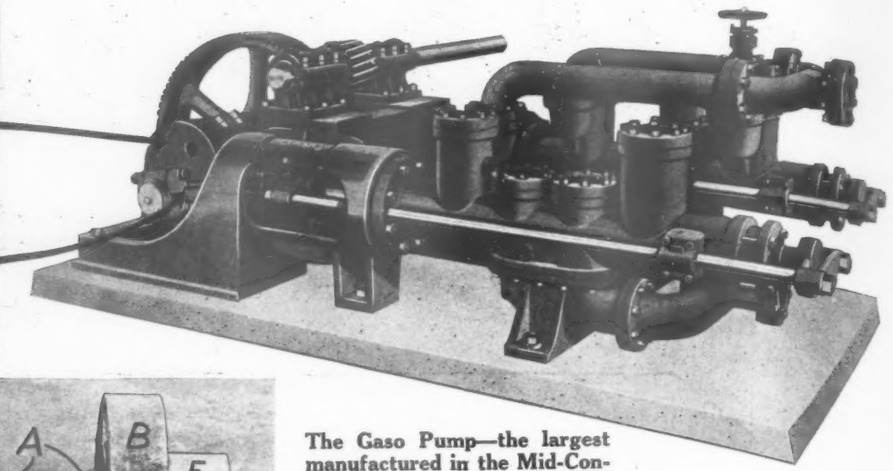
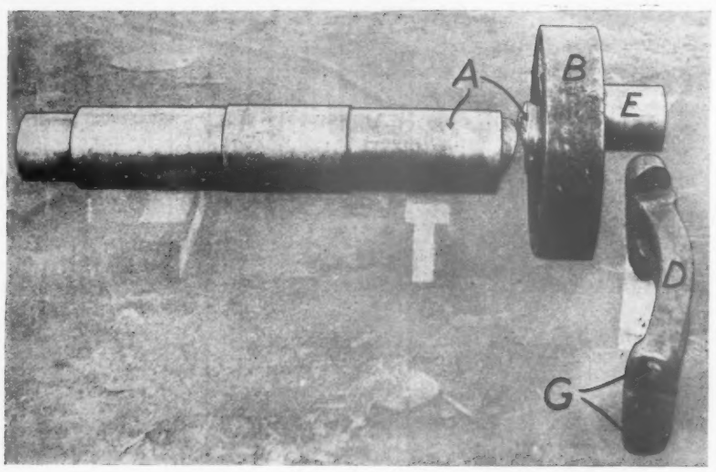
VALVES

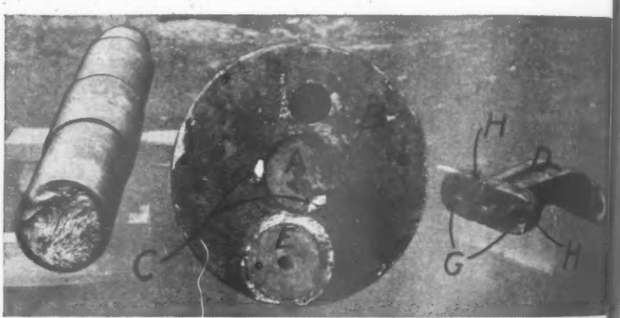
This "Smash-up" Proved the Quality of Oklahoma Electric Steel





The Gaso Pump—the largest manufactured in the Mid-Continent Field.





Photograph of Pump Before Accident and Three Photographs of Oklahoma Electric Steel Parts Taken Afterward. (The Shaft Was Not Oklahoma Electric Steel.)

A Gaso Pump, parts of which are made of Oklahoma Electric Steel, underwent an accident. (Results shown above.) The superior quality of Oklahoma Electric Steel is clearly shown by the photographs and following explanation.

The connecting rod "D" operates laterally and is connected to the crank shaft by means of a box about the pin "E." The bolts holding the connecting rod box to the rod "D," and which pass through the holes "G" were pulled apart, dropping the connecting rod "D," so that the continued operation of the machine submitted a great strain on the rod "D" and battered the end at "H." The pin "E" is an integral part of the Oklahoma Electric Steel crank disc "B." Rod "D" is Oklahoma Electric Steel.

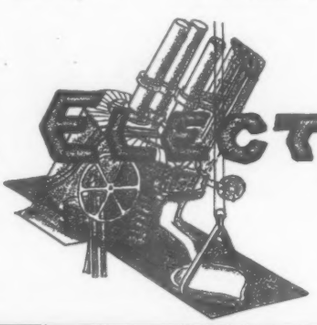
A 5½-inch cold rolled Steel Shaft "A" is keyed into an Oklahoma Electric Steel Crank disc "B" with a 1¼ inch x 1¼ inch by 4 inch steel key "C." In the accident the key "C" was sheared into two pieces, one piece being carried almost half way around the broken end of the shaft "A," and inside the crank disc "B."

The Shaft "A" was twisted apart, the broken end remaining in the crank disc "B."

Oklahoma Electric Steel did not break. The pin "E" was not even bent. The crank disc "B" with integral pin "E" is to be used again. The connecting rod "D" was bent and battered on the end at "H," but did not show the slightest crack.

This superior quality of Oklahoma Electric Steel, prompt delivery assured by our advantageous location, as well as our intimate knowledge of the requirements of oil field equipment, along with a saving in time and freight, have won for this company the confidence and appreciation of leading Mid-Continent manufacturers.

OKLAHOMA ELECTRIC STEEL



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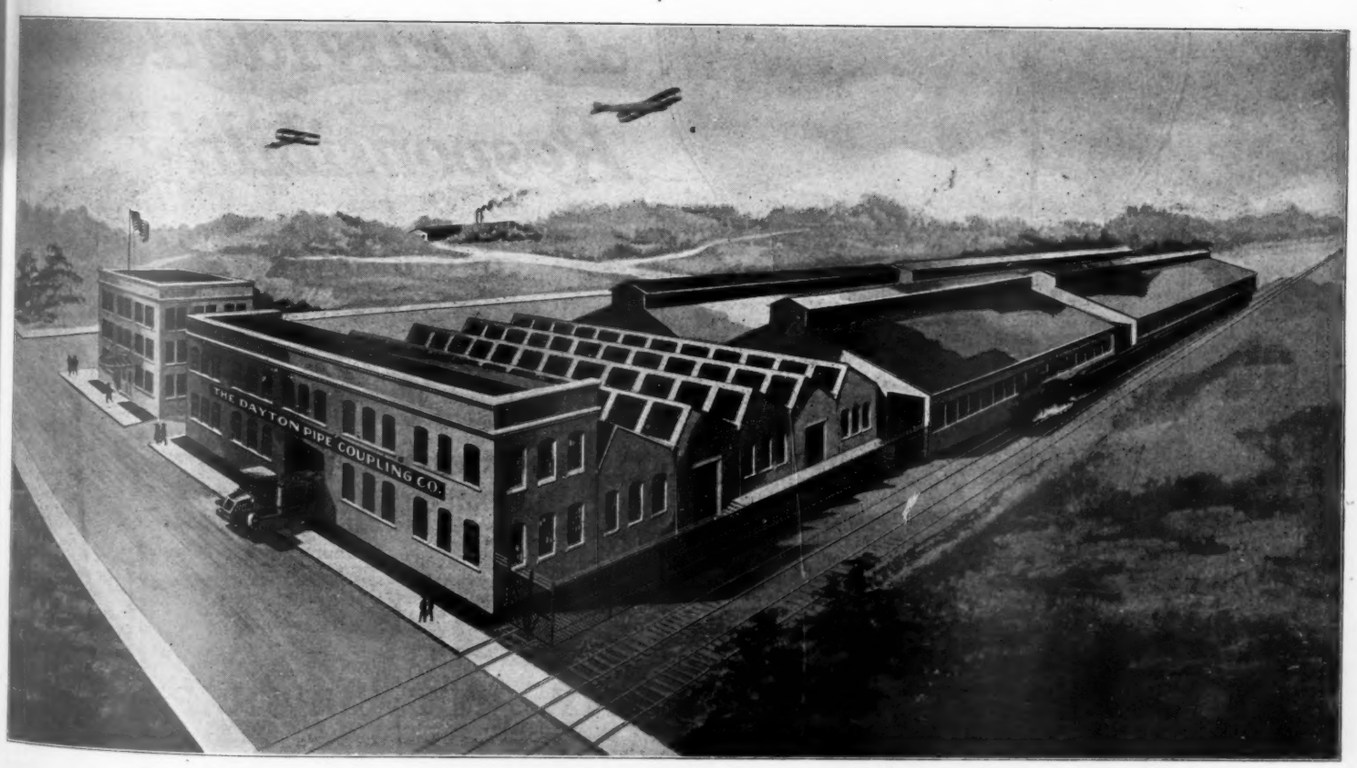
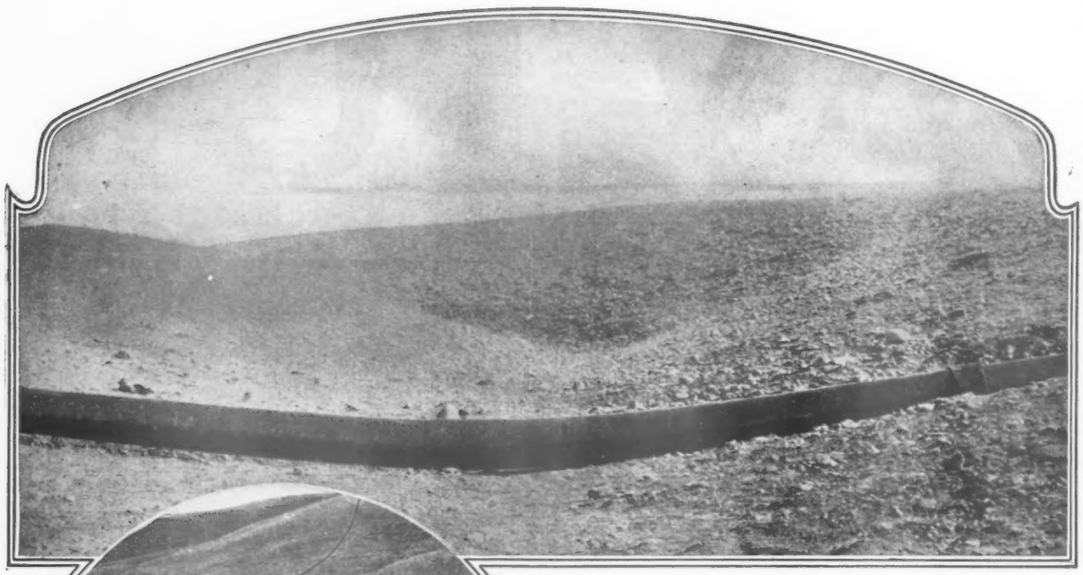
For a Quarter of a Century



The DAYTON PIPE COUPLING Co.
Dayton, Ohio.



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AFTER the final connections have been made and the last tests completed, the responsibility rests solely with the pipe. When continuous Uniformity, great Strength, and exceptional Ductility are combined in the tubular material, the line should be capable of carrying the responsibility—year after year—with complete satisfaction.

In this installation, note the readiness with which the pipe follows the contour of the ground—note the slack left in the line to care for expansion and contraction. Exceptional ductility makes this material especially adaptable for pipe line installations of this rugged type—while the factor of durability, so carefully built into every length, makes the investment a sound one for the company that laid this 72-mile oil line.

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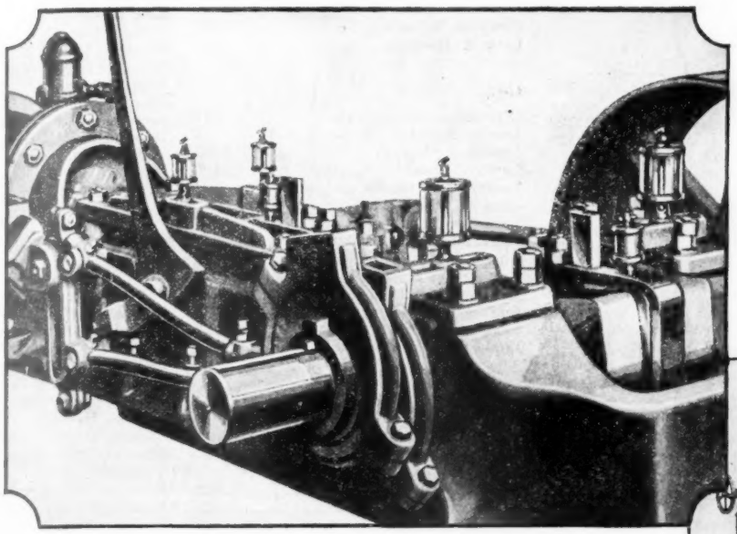

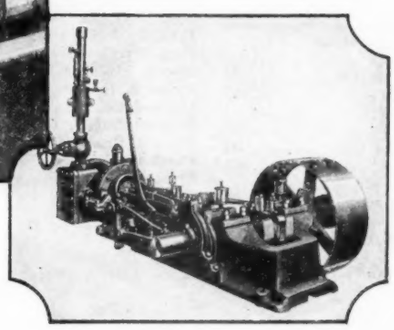

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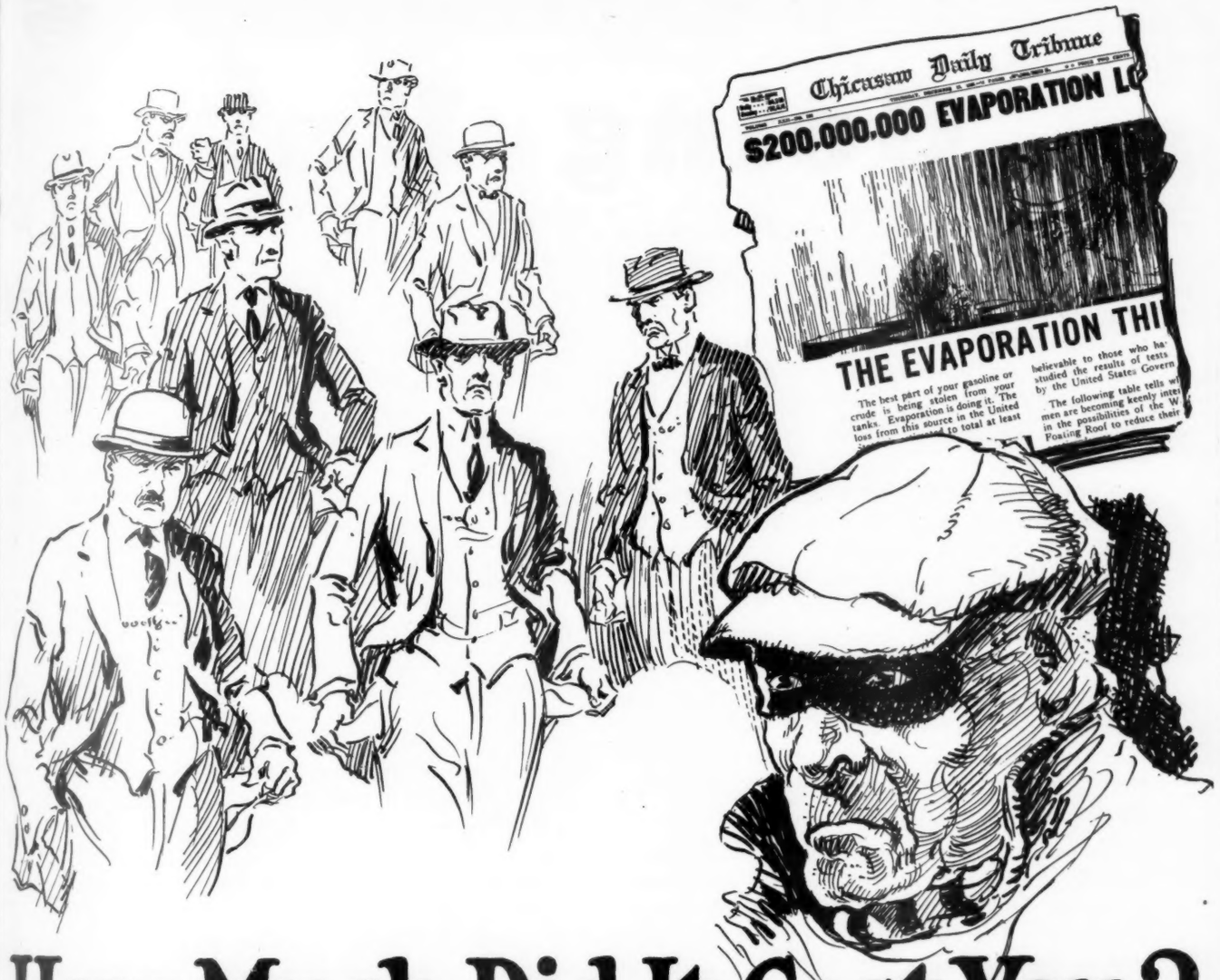
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But first write for the bulletin.

ANNUAL SAVINGS
LOSS IN DOLLARS

Annual Evaporation Losses from a 55,000-Barrel Tank Handling 10,000 Barrels a day—in Dollars

Evaporation Losses in Dollars Based on 42 Gallons of Gasoline to the Barrel and a Price of 10 Cents a Gallon

Kind of Oil Pumped—	Sheathing roof covered with gas tight galvanized iron	Wiggins Floating Roof
Motor Fuel (58° Be. Gasoline)	$27,300	$1,260
Light Crude (37°-40° Be.)	16,380	840
Average Mid-Continent Crude (33°-36° Be.)	12,600	630

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The Oil and Gas Journal is proud of this fellowship with its readers in every branch of the industry, producers, refiners, marketers, who are so quick to recognize service and to acknowledge it so gracefully. It encourages every member of the staff, in whatever field or country, to redoubled efforts to keep "The Big Yellow Book" worthy of readers so loyal and enthusiastic. It is a constant inspiration to make the "Book" better with each issue.

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